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CPSU/UH Avian History Report 11 A (B)
HISTORY OF ENDEMIC HAWAIIAN BIRDS

Part I. POPULATION HISTORIES--SPECIES ACCOUNTS
Forest Birds: *Vestiaria coccinea*, *Drepanis funerea*,
Drepanis pacifica

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51. Vestiaria coccinea
I'iwi
52. Drepanis funerea
'Ō'ōnukuumu
53. Drepanis pacifica
Mamo

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CPSU/UH Avian History Report 11B
HISTORY OF ENDEMIC HAWAIIAN BIRDS

Part I. POPULATION HISTORIES--SPECIES ACCOUNTS

Forest Birds: I'iwi, 'Ō'ōnukuumu, and Mamo

ABSTRACT

Vestiaria coccinea is a small, brilliant-scarlet forest bird with black wings and tail and a long curved orange bill. It ranges over all six forested Islands. Exhaustive search of literature and field journals uncovered some 838 observational notes, collection records, reports and related statements on relative abundance and geographical distribution from 1778 to 1978. All records are serially numbered, arranged in geographical and chronological order, referenced as to source and systematically analyzed. It is concluded that, since the late 1800's 'I'iwi have depopulated severely, if not completely, from low to mid-elevations below about 3000 ft. and significantly, if only moderately, above that elevation. Extinct on Lāna'i and rare on O'ahu and Moloka'i, 'I'iwi can presently be termed abundant only in a few selected localities above about 4000 ft. and then perhaps only seasonally on Kaua'i, Maui and Hawai'i.

51. Vestiaria coccinea
'I'iwi

The 'I'iwi is a small (5 to 6 inch long) brilliant-scarlet forest bird with vermillion-red legs and long (1-1 1/4 in.) curved orange bill, and black wings and tail (Rothschild 1900). It was first described in 1780 by George Forster from specimens collected by Captain Cook's naturalists in 1778 and/or 1779 (Stresemann 1950). This species occurred without perceptible differentiation on all six forested islands - Kaua'i, O'ahu, Moloka'i, Lāna'i Maui, and Hawai'i.

Numbers and the principal repositories of some 505 'I'iwi specimens are as follows: Bernice P. Bishop Museum (126), American Museum of Natural History (90), and British Museum of Natural History (48) (Banko 1979 report).

General descriptive accounts of 'I'iwi, including information on relative abundance and geographical distribution, are given by Wilson and Evans (1890b), Rothschild (1900), Henshaw (1902), and Perkins (1903). C. R. Eddinger (1970 PhD dissertation) studied its breeding biology on Kaua'i in 1969 and 1970. Berger (1972) provides a contemporary account of what is known of this species.

In the following historical account, one to three digit numbers in parenthesis refer to specific records in the Appendix. Sources cited in the Appendix may be traced to complete references in the bibliography.

Island of Kaua'i

Early Notes and Records (1778 to 1900):

Cook (1784), at anchor off Waimea in January 1778, was the first European to record the 'I'iwi, writing that although this bird was "never met with alive...great numbers of skins...of a beautiful scarlet colour...often tied up in bunches of twenty or more" were offered for sale (brought to barter, Stresemann 1950) (104,105). At the same location on 14 March 1792, it was noted in the Log of the Chatham that "great numbers of the skins of the Red Bird" (?Vestiaria coccinea) were brought off for sale (Bell 1929) (106).

Other early naturalists and ornithologists did not exclude Kaua'i from general statements made on relative abundance and geographical distribution of 'I'iwi in the Islands. Cassin (1858) credits T. R. Peale with the statement that the 'I'iwi was "one of the most common species" inhabiting "most" of the Islands visited by members of the U. S. Exploring Expedition in 1840 and 1841 (1). In the first list of native Hawaiian birds compiled by a resident, Dole (1879) noted that this species occupied the "whole group" (2).

S. B. Wilson was the first ornithologist to visit the Islands for the sole purpose of observing and collecting birds. Writing of his 1887-1888 visit, Wilson (1890a) stated that the 'I'iwi was "perhaps the most noticeable of the forest-birds of the islands" (3). On Kaua'i, Wilson collected one specimen in an unspecified locality in September 1888 and possibly observed it on Kaua'i "on the sea-beach where it is driven by the high winds from its forest home" (18,19).

H. C. Palmer collected birds on Kaua'i for W. Rothschild in 1891 and 1893. At least one 'I'iwi specimen was taken at an unspecified location on 22 January 1891, one at Halemanu in April, and one at Kahōluamanu in June 1893 (Banko 1979 report) (20, 45, 81). Writing later of his experiences with Palmer at Kahōluamanu in February and March 1891, Munro (1944) wrote that 'I'iwi were "so numerous...their wings keep up a continual buzz...a half-dozen being in a tree at a time" (80). Kaua'i was one of the islands referred to in the later statement by Rothschild (1900) that 'I'iwi inhabited "all wooded regions from the lower hills up to 8000 feet or more" (4).

R. C. L. Perkins collected one 'I'iwi specimen at an unspecified 4000 ft. elevation locality in May 1894, observed them "in thousands" on the Kahōluamanu Plateau on 15 April, termed them "common" at Kahōluamanu in October 1895, and recorded their presence "at a good elevation...in the mountains some miles west from Lihue" in July and/or August 1896 (Banko 1979 report) (21, 82, 83, 108). Writing later of these and other observations Perkins (1903, 1913) stated that the 'I'iwi was "found throughout the woods...(and) one of the most abundant" of all the Drepanids, being found in the forests of all the islands (5, 9).

W. A. Bryan and A. Seale observed and collected birds on Kaua'i for a two week period in April 1900, securing 2 'I'iwi specimens at Halemanu, 9 at Kahōluamanu, and 7 in unspecified localities (23,46, 84). Presumably with this and experiences on other islands in mind, Bryan (1915) stated that this species was to be found "in favorable localities from near the sea-shore to the upper limits of large forest trees...(being) most abundant from two to four thousand feet" (6, 7).

There are several other records which are known or are presumed to have originated in the 1890's. F. Gay collected two specimens at Makaweli on 26 December 1892, and G. C. Munro took six specimens in unspecified locations (Banko 1979 report) (22, 107).

Later Observations (1901 to 1949):

'I'iwi seem not to have been recorded for a period of 19 years after 1900. J. A. Kusché collected one specimen at "Kiaku Cave" and 5 examples at unspecified 4300 and 4500 ft. elevation localities in April 1920 but seems to have left no

other records (24, 25). Munro (1947) and Gregory (1929) report that only one of this species was seen by Munro from 25 to 27 September 1928 in the forests of northwest Kaua'i around Halemanu penetrating as far as the Waiakaoli stream and the pali overlooking the Kalalau Valley (47, 50).

'I'iwi seem not to have been recorded on Kaua'i during the 1930's but there are several notes which were written in the 1940's. Donaghho (1941) termed this species "not rare" above the Robinson mountain house at Kahōluamanu in October 1941 (85). Munro (1944), comparing previous with later populations, stated that the 'I'iwi was "originally extremely numerous...now greatly reduced" (8). Pearsall (1946b, 1947) saw the 'I'iwi in the Koke'e area and along the trail to Alaka'i Swamp in September 1946 (29, 48, 49). Munro (1947) reported that "many" were seen at Koke'e in May and/or June (?1947) (51). Woodside (1947) recorded the presence of this species in the Kumuweia Ridge area, presumably in 1947 (52).

Recent Sightings and Reports (1950 to 1978):

There seem to be only two notes of the 'I'iwi on Kaua'i which date from the 1950's. Eastman and Eastman (1958) "found" this species near Kalalau Lookout sometime during their 23 March to 14 April 1958 tour of the Islands (53), and Hanson (1959) reported a "pair seen" in the Kōke'e area in June 1959 (54).

'I'iwi were observed and recorded on Kaua'i in a variety of locations during the 1960's. From 28-30 June 1960 Richardson (1960) "saw many" in the Kōke'e area, along trails to Pihea, Kilohana Lookout, Awa'awapuhi, etc. (55). In reporting results of a June-August 1960 survey later, Richardson and Bowles (1964) estimated seeing "at least 134...an average of about 5...per mile of trail and about this number were heard but not seen" in 'ohi'a and koa forests about 2750 ft. elevation in and around Alaka'i Swamp (10). In a parallel statement Richardson and Bowles stated that they "crudely estimate at least 18,500" of this species remained on Kaua'i in "perhaps 75 square miles" of habitat, terming the 'I'iwi a "moderately common resident" in 'ohi'a and koa forests generally above 2750 ft. elevation (11, 12).

In 1961 King (1961) noted that 'I'iwi were seen "frequently" on the trail from end of Camp 10 road to Alaka'i Swamp on 3 March, and on the 4th wrote that this species was "one of (the) commoner species" detected on the return trip (30, 31). Returning briefly to Alaka'i Swamp in September 1961 Bowles (1962) stated that the 'I'iwi was seen and heard "quite frequently" along the trail to the Alaka'i Swamp Koai'e cabin, and observed in an afternoon's birding near the cabin (32, 86).

On 20 April 1962 Ord (1962) noted "large numbers seen and heard" along the trail to Koai'e cabin from trailhead at end

of Camp 10 road, noted and heard on 21 April "many" singing at 0600 hours near the Koai'e cabin and saw this species on a ridge to the south (33, 87, 88). In the only record of 'I'iwi on Kaua'i in 1963, Ord (1963) termed this species "abundant" in Alaka'i Swamp, probably along the Möhihi River trail to the Koai'e cabin, during a two-day field trip 1-2 September (34).

In 1964 Ward (field journal) "saw two" 'I'iwi from the back of a truck on his way from Kokee State Park to the Alaka'i Swamp trailhead at the end of the Camp 10 road on 20 February, termed this species "numerous" from the 15 seen and heard along the trail from end of the Camp 10 road to Koai'e cabin - and on 21 February - stopping every 100 yards or so to listen and watch - recorded "25 plus" along the trail from Koai'e cabin toward Wai'ale'ale about 2 or 3 miles with a side trip into the deep valley on the other side of the plateau and return to Koai'e cabin (35, 56, 89). Returning from the Koai'e cabin to road-end trailhead on 22 February 1964, Ward (field journal) wrote, "25 recorded" on the 3-hour hike (36). On the same or a similar 21-23 February 1964 trip, Walker (1964) heard 'I'iwi calling in "increasing numbers" as he progressed further into the forest toward the Koai'e cabin from the end of the Camp 10 road, observed it nesting near the cabin, termed it "numerous" along the trail from the cabin up and over the ridge into "Ooaa" valley where it was (with 'Apapane) the most common bird (90-93). Later, from 19 to 22 March 1964, Scheffer and Scheffer (1965) noted "3 seen...2 others heard" at an unspecified location in the Alaka'i Swamp (26).

In 1965 Ward (field journal) noted "several" 'I'iwi on a hike from and return to Koai'e cabin and beyond on 2 May (37). From 11 to 15 August Donaghho (1965b) counted 2 of this species along the Möhihi River to Koai'e cabin, 10 along the Koai'e cabin-Wai'ale'ale trail, 4 at Wainiha Rim, 3 along Wai'ale'ale-Koai'e cabin trail, and 5 from Koai'e cabin along Möhihi River trail (94-98). From 30 November to 2 December, Banko (field journal) recorded 'I'iwi as "common" on the trail from end of Camp 10 road along Möhihi River to Koai'e cabin and return, but "scarce" along the first mile or so of trail between Koai'e cabin and Wai'ale'ale cabin (38, 39, 99).

In 1966 U. S. Fish and Wildlife Service records show that three 'I'iwi were banded on Koai'e Ridge near the cabin on 14 May (100). Anonymous (1966) termed 'I'iwi "very common" in the Alaka'i Swamp area from 28-30 May (40). Donaghho (1967a) noted that this species had been reported just outside the Kōke'e Museum on 6 June (57), and from 16 to 23 November 1966 Ord (1967) noted that 'I'iwi had been seen near Kalalau Lookout and Kōke'e Museum (58, 59).

In 1967 Hansen (1967) termed this species "plentiful...one heard" in her Koke'e garden in March (60). Donaghho (1967c) logged "about 30 seen" on a trip into the Alaka'i Swamp on

which he got back two miles from Koai'e Gulch on 28 August (101). Birindelli (1968) stated that 'I'iwi were often seen and heard along Kōke'e trails...Nualolo, Honopū, Awa'awapuhi, Alaka'i, Halemanu, Kumuwela, and Highway 50 to Kalalau in September 1967 (61). Wolf (1969) also noted that this species was seen at Kōke'e in September 1967 (62). Donaghho (1968a) reported one seen at Kalalau Lookout on 5 November 1967 (63).

In 1968 Orenstein (1968) noted one 'I'iwi seen in an unspecified locality in Alaka'i Swamp on 3 January, and two seen at Koke'e on 5 January (27, 64). Anonymous (1968) recorded the presence of this species on a trip into the Alaka'i Swamp on 17 February (28). On 31 March, Keith (1968) reported seeing one "in plain view" in Koke'e Park (65). On a 31 May and 1 June field trip Gauthey, et al (1968) reported "approximately 20 seen and heard" in one traverse of the ridge along the trail extending SSE from the Koai'e cabin paralleling Koai'e stream approximately 1 1/2 miles to the source, and making short side trips out spur ridges and descending into the canyon at the stream origin (102).

In 1969, Anonymous (1970) reported that one 'I'iwi was censused in about 1 hour in heavy rain during the 29 December Christmas Count in Kōke'e Park (66), and Eddinger (1970 PhD dissertation) recorded finding 4 'I'iwi nests in a 2 square mile study area east of Kalalau Lookout bordered on the west by Kalalau Road and on the north by Pu'u O Kila Road (67). Hawaii Division of Fish and Game (1969 report) listed the 'I'iwi as a breeding resident of Kaua'i (14).

In 1970, Eddinger (1970 PhD dissertation) recorded finding 18 nests of this species in the same area covered in 1969 (67). In addition, Plews (1970) recorded 'I'iwi in Kōke'e Park sometime from 8 July to 2 September (68), Sears (1971) reported that five were censused in Kōke'e Park during the 29 December Christmas Count (41), and Berger (1970) termed this species "still fairly common" on Kaua'i (13).

In 1971 van Riper (field journal) on hiking surveys from 27 April to 1 May observed one in an unspecified area of Kōke'e from 1200 to 1700 hours; counted 31 from 0700 to 1700 hours along the Mōhihi Road, Kōke'e; tallied 20 from 0930 to 1800 hours along the Alaka'i Swamp trail; saw 5 from 0900 to 1400 hours along the trail between the Girl Scout Camp and Halemanu; and logged 46 seen from 0700 to 1645 hours along the Kawaikoi Stream Valley (42, 69-72). Stroburt (1971) recorded the presence of 'I'iwi along a mile and a half section of the Alaka'i Swamp trail on 2 June 1971 (43). From 15 to 18 September 1971 Mull and Mull (1971) state that an 'I'iwi was seen in the space of a few minutes in back of a Kōke'e cabin and that this species was "constantly" within sight or sound in the area where Pihea trail joins the Alaka'i Swamp on at least one occasion during the 15 to 18 September 1971 period (73, 74).

'I'iwi seem not to have been recorded in the field on Kaua'i in 1972, however Berger (1972) stated that this species was "still fairly common (on Kaua'i)...where, in general the birds are found at elevations above 2,800 ft. elevation" (15). M. Mull (1972) considered that this species "remains moderately abundant in local native forests" on Kaua'i (16).

In 1973 on the 29 December Christmas Count, Hart (1974b) reported 5 'I'iwi censused along Honopū trail, 11 along Mōhihi trail in the Camp Sloggett area, and 33 in the East Alaka'i Swamp (75, 76, 103). Hart (1974a) stated that this species was the fourth most abundant endemic bird seen on an undated 4-day field trip into the West Alaka'i Swamp, presumably in 1974 (77). Sears et al (1975) reported that 110 'I'iwi were censused, presumably mostly in the Kōke'e area, during the 28 December 1974 Christmas Count (44).

'I'iwi seem not to have been noted in 1975 or 1976, but on 19 March 1977 "one or two (were) enticed with tape recording" in the Kōke'e koa forest (Johnson 1977) (78), and Boynton (1978) reported that 21 were censused in Kōke'e on the 18 December 1977 Christmas count, a count considered low due to fog and rain (79). Atkinson (1977) judged the 'I'iwi to be "now fairly common" though reduced since 1891 (17).

Island of Ni'ihau

Positioned to the lee of tradewinds blowing across Kaua'i, Ni'ihau is a low arid island with no resident forest bird population during the historic period. Wilson and Evans (1890) report that F. Sinclair "saw numbers" of 'I'iwi on Ni'ihau where they had been driven by gales from Kaua'i (109). Storm-driven forest birds have apparently not been observed on Ni'ihau this century, but this may be due more to a lack of reporters than of opportunity.

Island of O'ahu

Early Notes and Records (1825 to 1903):

Bloxam (field journal) seems to have been the first European to record the 'I'iwi on O'ahu, noting while in the Nu'uuanu Valley on 13 May 1825 that two were shot, possibly for his collection, and that "natives report it rather scarce" (Bloxam and Jones 1925) (249). Emerson (1928) left a casual record of its occurrence at the north end of O'ahu a few years later, noting in 1833 that the 'I'iwi came for honey to the big kukui trees and kou (Cordia subcordata) tree near his residence in Waialua when "driven from the upland forests by the cold rain" (135). F. Deppe collected two 'I'iwi specimens at an unspecified location, possibly Nu'uuanu Valley, one labeled "January 1837", and the other merely "January", leaving no record of its relative abundance (Banko 1979 report) (118, 119). While not mentioning O'ahu specifically,

Cassin (1858) quotes T. R. Peale as stating that 'I'iwi were "one of the most common species inhabiting "most of the group of Hawaiian Islands" when visited by the U. S. Exploring Expedition in 1840 and/or 1841 (1). Dole (1879) also included O'ahu in the range of this species by inference when he listed it as inhabiting the "whole group" (2). Wilson and Evans (1890) apparently left no record of having seen or collected the 'I'iwi on O'ahu during Wilson's 1887/1888 visit, though Wilson (1890) reported that this species was "perhaps the most noticeable forest-bird of the islands" (3). H. C. Palmer apparently collected only four 'I'iwi specimens on O'ahu but made no comment on their relative abundance or distribution on this island (Banko 1979 report) (121, 138). However, Rothschild (1900), presumably kept informed by Palmer in correspondence, stated that the 'I'iwi was "generally distributed" over the various Islands inhabiting "all wooded regions from the lower hills up to 8,000 feet or more" (4).

R. C. L. Perkins made a number of references to 'I'iwi on O'ahu in his field journal during his 1892 to 1896 studies. Perkins (field journal) recorded their presence near Waialua, presumably on the ridges of Ka'ala, and in the vicinity of the Wai'anae Plantation dairy in April and May 1892 (120, 136), and in 1896 in unspecified localities while camped on the lee side of the Wai'anae Range somewhat to the south of where he collected in 1892 (122).

In the Ka'ala area Perkins (field journal) noted "great numbers" of 'I'iwi along the stream at Kawailoa, "relatively scarce" in some collecting localities around Ka'ala, though "relatively common" there in the direction of "the Gap" (137, 139, 140). On other occasions Perkins found this species to be "quite rare" on the Waolani and Kōnāhuanui slopes of Nu'uauu Valley near Honolulu, and generally "more numerous" in the places he collected in the Wai'anae Range than along the ridges above Nu'uauu Valley (128, 250). In his published works, Perkins (1903, 1913) termed the 'I'iwi "abundant in the forests" of all the islands...one of the most abundant...of all Drepanid birds", though observing that populations on O'ahu were "now less abundant than on the other islands" (5, 110). Finding this species "even in the mountains in the immediate vicinity of Honolulu, although rare", he noted that "further away from the city it is common enough in both the mountain ranges" (110).

Brigham (1899) noted the 'I'iwi in his garden in Nu'uauu Valley in fair weather, and that this species was "often" driven down to the shore from the mountain ridges by severe storms (252).

Seale (1900) observed and collected birds in and around Honolulu from 12 November 1899 to 20 March 1900. During that period he saw an 'I'iwi nesting on 27 February in the large 'ohi'a forest of Waiolani mountains but was able to obtain a

total of only two specimens, noting that while this species was "once so common" it had become "very scarce" (251). Later, with Bryan in the Waianae (from 21 January to 9 March 1901) they collected eight specimens though two did not have any locality specified. (Banko 1979 report) (123, 124). Later, Bryan and Seale (1905) termed the 'I'iwi "by far the rarest of the 5 species of mountain birds...hours of patient search...only resulted in securing 6 specimens" in the vicinity of Pukaloa cabin in the lower edge of the forest within a few hours climb of Mt. Ka'ala (141).

L. H. Miller and C. E. Blacow were the last to collect 'I'iwi on O'ahu during this period, taking 2 specimens at 3700 ft. elevation on Leilehua Ranch, and 2 at unspecified locations in the Wai'anae Range in April and May 1903 (Banko 1979 report) (125, 151).

Later Observations (1904 to 1935):

Only about a half-dozen statements on the population status and distribution of 'I'iwi appear to have been made during the 32-year period 1904 to 1935. W. F. Wilson (Macrae 1922) noticed this species about 1910 "on 2 or 3 occasions" in the garden near his residence on Prospect Street, on the south side of Punchbowl Hill - "about one-third of a mile from the business center of Honolulu" (253). Bryan (1915) included O'ahu in his general statement that the 'I'iwi was present "in the forests on all the larger inhabited islands in favorable localities from near the sea-shore to the upper limits of the large forest trees...and "most abundant" from two to four thousand feet (6, 7). MacCaughey (1917) stated that this species was present "in small numbers" in the Manoa rain forest (254). G. C. Munro (Gregory 1935) was quoted as saying that 'I'iwi had been seen in O'ahu "in recent years...but must be very rare" (126). In an exchange of letters Perkins (1949) was informed by G. C. Munro that he (Munro) "did not see one" of this species, though he believed he heard it "once or twice" during a months-long survey of birds in 1935 along "fully 200 miles" of the new CCC trails in most sections of the forest (129).

Recent Sightings and Reports (1936 to 1978):

There seem to be only about 27 casual reports of 'I'iwi in the Wai'anae Mountains, 9 in the northern portion and some 17 in mid and southern sectors during the 43-year period 1936 to 1978.

In the northern sector (HALEIWA quadrant), Northwood (field journal) noted this species to be "plentiful" on Ka'ala on 23 October 1938, detected "several" on a walk to the bottom of Ka'ala on 21 May 1939, heard this species "several times" on the firebreak trail (Mt. Ka'ala?) on 3 September 1939, sighted an unspecified number on a walk to Ka'ala stream on 12

November 1939, and saw "several" along Kawaiiloa trail to the summit on 4 July 1940 (142-146). Richards (field journal) saw an unspecified number of 'I'iwi on the ridge between the east branch of east Makaleha and Kaumokunni Gulches along the trail to Mt. Ka'ala on 14 March 1948 (147). Anonymous (1973) made an "unmistakable observation", presumably of one bird, on Dupont trail on the north flank of Mt. Ka'ala a few days prior to 11 December 1972 (148). Ralph and Pyle (1977) state that "about 25" were reported on a survey at around 3000 ft. elevation near Mt. Ka'ala in December 1976 (149). Shallenberger and Vaughn (1978), apparently reporting results of a survey referred to by Ralph and Pyle (1977) state that 15 were counted in "recent surveys" of U. S. Army land near Mt. Ka'ala, most in a small area below the tramline (150).

In the mid and more southerly portions of the Wai'anae Mountains (SCHOFIELD BARRACKS quadrant) along Pālehua trail, Northwood (field journal) watched an immature 'I'iwi within sight of the Pālehua ranch house on 22 January 1939, observed "quite a dozen" on 24 November 1940, and recorded "none" on 12 January and 1 June 1941 (152-155). Also along Pālehua (Palikea) trail Obata (1965) recorded one "by the cabin" on 25 December 1964, Anonymous (1967b) logged "at least 3 seen" on 14 May 1967, Donaghho (1967b) stated that this species could be seen "if lucky" on 17 June 1967, and Anonymous (1973) said that one was reported about "2 months ago" on 11 December 1972 (164, 166, 168, 169). Along Kalena trail Hatch (1948) saw "several" on 14 March 1948, Clark (1948) stated that this species was seen, Johnson (1948) reported one seen on 10 October 1948, Birch (1949) noted them "in such numbers" on 13 February 1949, Kojima (1951) logged "none seen or heard" on 12 November 1950, King and Stephenson (1958) recorded "3 adults...5 juveniles" seen on 14 September 1958, and Rockafellow (1961) stated that one was "seen on summit only" on 10 September 1961 (156-161, 163). Along Hāpapa trail, Hatch (1959) noted that 'I'iwi were "heard" on 28 June 1959, and Obata (1965) recorded one at Kalua Gulch near Hāpapa trail on 27 December 1964 (162, 165). Donaghho (1967b) reported that none were found on 10 and 11 June on Mt. Kaua but that W. Hay had seen this species on past trips in one of the valleys under the main peak (167, 167a).

In contrast to the 27 casual reports of 'I'iwi in two quadrants of the Wai'anae Mountains from 1936 to 1978, some 83 records (including negative reports) were compiled in six quadrangles of the Ko'olau Range during the same time frame.

In the northern sector (KAHUKU quadrant), Northwood (field journal) found "none" on a 23 June 1940 hike along La'ie trail to the summit of the Ko'olau Mountains and a half-mile south (170).

In the adjacent quadrangle to the south (HAUULA), presence or absence of 'I'iwi was casually noted from 1936 to 1978 on

55 occasions. On 'Ōpae'ula trail H. Baldwin et al (1940) and Northwood (1940) reported that two observers hiking 4 miles in 5 hours saw (censused) 2 'I'iwi on 24 December 1939 (181, 182). Donaghho (1965a), covering at least two thirds of 'Ōpae'ula trail on 18 November 1965, counted 2 of this species, reporting "conditions just as disappointing as before" (220). Along the trail leading out of Wahiawa (?Castle trail), Cogswell (1945) saw 1 and heard 3 others on 31 December 1944, and King (1959a) felt "pretty certain" that one was heard on 24 May 1959 (189, 211). Northwood (field journal) found none on Castle trail on 28 July 1940 (183). H. Baldwin et al (1941) report that four 'I'iwi were seen (censused) during a 9 hour, 15 mile hike along Castle, Summit, and Poamoho trails on 22 December 1940 (186, 187).

The remaining casual records of 'I'iwi relative abundance, presence, or absence in HAUULA quadrangle originated from observers hiking Poamoho trail. These observations are listed chronologically and according to Fall-Winter (September to February), or Spring-Summer (March to August) season (Table 1).

Table 1.

Observations of 'I'iwi Along Poamoho Trail From 1936 to 1978

No.	Fall-Winter	Spring-Summer	Year	Reference
171		31 seen or heard	1936	(6)
172	plentiful		1937	(6)
173		heard	1938	(6)
174	seen		1938	(6)
175	seen		1939	(6)
176		found	1939	(6)
177		heard	1939	(6)
178	many young		1939	(6)
179	seen		1939	(6)
180	found		1939	(6)
184	heard 1		1940	(6)
185	present		1940	(6)
188		seen	1941	(6)
190	heard several times,	not seen	1945	FINR45
191		a few seen	1946	PEAG46a
192	2 seen lower third	of trail	1947	PORR48
193		seen	1949	CAMM49
194		one counted	1949	CHOH49
195	9 censused		1949	HATG50
196		one noted	1950	BRAR50
197		seen	1950	PORH50
198	none seen (detected)		1950	(14)
199	5 censused		1950	HATG51
200	2 counted		1951	BOTI51
201		2 seen	1951	ANON51
202		1 counted	1951	THOW51
203	1 seen (1/2 mile covered)		1952	(14)

Table 1. (Continued)

<u>No.</u>	<u>Fall-Winter</u>	<u>Spring-Summer</u>	<u>Year</u>	<u>Reference</u>
204	2 censused		1952	ANON53
205		1 seen	1955	LABA55
206	1 seen		1957	MACL57
207		pair seen	1957	HANC57
208		1 present to summit	1958	ROCR58
209	1 seen along trail, 7 along jeep road		1958	KOJU59
210		none seen	1959	KINJ59b
212	none seen or heard		1959	HANC60b
213	heard		1960	SHAM60
214	1 seen		1960	KOJU60
215	2 noted		1963	ANON64
216	seen		1964	ORDM64
217		1 or 2 (detected)	1964	LABA64
218	not seen		1965	KINJ65
219		saw 2, heard 1	1965	DONW65a
221		none (detected)	1966	DONW66a
222	seen		1967	ANON67a
223		possible sighting	1972	MULW72b
223		none seen or heard	1972	MULW72b
224	3 seen		1972	ANON73
225	1 seen and heard		1977	PYLR77
226		1 seen, 2 (?others) heard	1977	PYLR77

Considering the infrequent and casual nature of the reports listed in Table 1, and the transitory habits of 'I'iwi in seeking food, there does not appear to be any significant difference between Fall-Winter and Spring-Summer seasons in numbers of this species seen and/or heard. However, notes of comparatively high relative abundance such as "31 seen or heard" in 1936, "plentiful" in 1937, "many young" in 1939, "9 censused" in 1949, and "5 censused" in 1950, are not in evidence for the period 1951 to 1977, indicating that a significant depopulation of this species occurred along Poamoho trail during the past 25 years or so. In a recent 250 man-day survey of forest birds over a broad area in the Wai'anae and Ko'olau Ranges, Shallenberger and Vaughn (1978) compiled a total of only 15 records along Poamoho trail, many on consecutive days, observing a maximum of only 2 'I'iwi at any one time, with at least 3 or possibly more individuals involved (228). Findings by Shallenberger and Vaughn (1978) appear to confirm a conclusion that, compared to the numbers of 'I'iwi which lived in the Poamoho trail area prior to 1951, the present population is very low.

In KAHANA quadrangle, Hanson (1958) "possibly" heard this species along the Waikāne Ditch trail on 9 February 1958 (229). During the period July 1974 to January 1975 Thomas (1978) stated that from 1 to 3 were sighted in early morning hours and in evening before sunset on five occasions in the Sacred Falls area near a sea-level residence at Punalu'u in the vicinity of the Hau'ula border (230). During their surveys from December 1977 to March 1978, Shallenberger and

Vaughn (1978) compiled a total of four records in the Schofield-Waikāne area, including valleys north and south of the trail (231).

In WAIPAHI quadrant, some 12 observations of 'I'iwi have been noted from 1936 to 1977 along Kipapa trail and ridge. Northwood (field journal) logged "several" seen within a mile and a half of the Kipapa trailhead on 19, 25 and 26 February 1939 (232), observing "in one place at least 2 pairs" within 50 yards of each other, and terming the species "common" for a distance of about "a mile to 2 1/2 to 3 1/2 or 4 miles from the trailhead, near the top of the spur ridge which the trail follows most of the time" (233). In other Kipapa trail records, Northwood (field journal) noted this species "seen" on 10 March 1940 and "heard" on 9 June 1940 (234, 235). Anonymous (1940) "heard at least 6 and saw 1 flying" along Kipapa trail on 16 June 1940 (236). Northwood (field journal) in his last report for this area, recorded the 'I'iwi as both "seen and heard" on 19 January 1941 (237). In 1946 Rockafellow (1947) logged "2 seen" on Forest Trail No. 6 in upper Kipapa Gulch on 10 January, while Anonymous (1947) stated ambiguously that the 29 December 1946 Christmas Count of 'I'iwi for the 7 miles of Kipapa trail hiked was "the lowest" for this trail (two) and "confined mostly to the middle forest...one noted on flowering eucalyptus trees well into the forest" (238, 239). Four 'I'iwi were seen along Kipapa trail on 11 April 1948 (Pedley 1948), 1 was heard on 11 June 1950 (Kojima 1950), "none" were found on 3 December 1965 (Donaghho 1966a), and lastly, M. Mull (1977) logged "1 seen" along Kipapa ridge 1/2 mile from the summit on 15 May 1977 (240-243).

Few 'I'iwi records were compiled during 1936 to 1978 period in KANEOTE sector. On 16 April 1938, Northwood (field journal) noted "few" along Waimano trail (245). Marrack (1962b) logged "1 seen and heard" along 'Aiea Heights trail on 12 November 1961 (246). Shallenberger and Vaughn (1978) compiled a total of only five records in North and South Hālawā Valleys during their December 1977 to March 1978 surveys, stating that "at least 3 birds and probably a fourth were involved" since four records were at different locations in the upper North Hālawā Valley amphitheater, and the fifth seen from Hālawā trail (247). Shallenberger and Vaughn (1978) further report from their work that "sightings of immatures during the surveys is highly suggestive that breeding is occurring in North Hālawā Valley (248).

Of the five reports mentioning 'I'iwi in HONOLULU quadrangle from 1936 to 1978, only three are positive. Mack (1945) reported "2 seen" on Tantalus Loop Trail on 14 October 1945 (255). Anonymous (1947) logged "2 censused" on the 29 December 1946 Christmas Count (Kipapa Trail) but none were seen in the following listed areas: 'Ālewa Heights, Kāpalama Heights, Tantalus trail, and Woodlawn-St. Louis trail (256). Anonymous (1963) reported that two were censused in the

Tantalus/Punchbowl area on the 23 December 1962 Christmas Count (257). Mull (1972a) stated that 'I'iwi were "not found" in the Moanalua Valley, presumably in 1972 (258). Thomas (1978) reported observing one near the "Likeke" trailhead on Old Pali Road on 13 January 1978 (259).

A number of generalizations on the relative abundance of 'I'iwi on O'ahu were made during the 1936 to 1978 period. Munro (1944) presumably included O'ahu in his statement that this species "originally extremely numerous (was) now greatly reduced" in the Islands (8). Eastman and Eastman (1958) stated that they were "unable to find" 'I'iwi on O'ahu during their 23 March to 14 April 1958 tour but do not specify areas visited (127). Hawaii Audubon Society (1967) noted that this species was "rare" on O'ahu (111). Hawaii State Division of Fish and Game listed a "breeding population" of 'I'iwi on O'ahu but do not give locations (112). Berger (1970, 1972) states that this species is "rare and presumably on the verge of extinction" on O'ahu (113, 114). M. Mull (1972) listed the 'I'iwi as a candidate for the Blue List, stating that there had been "no reliable report" of this species on O'ahu for 4-5 years (115). Atkinson (1977) states that the 'I'iwi "once so common (was) now very scarce" (116). Shallenberger and Vaughn (1978) drew a number of conclusions about the status of the 'I'iwi from their 250 man-day December 1977 to March 1978 survey of forest birds, as follows:

1. All 24 survey records were within forest dominated by native trees and none were located lower than 1,400 ft. el. (131).
2. No sightings recorded in Elepaio from 1939 to 1978 were less than 1,600 ft. el. and most were above 2,000 ft. el. (132).
3. Not recorded on any of the previous highway-related studies in Moanalua Valley and in South and North Halawa Valleys (130).
4. Study (in both Wai'anae and Ko'olau Ranges) confirmed that populations are "precariously low" (117).

Thomas (1978) rephrased some of the findings by Shallenberger and Vaughn (1978), citing observations of 'I'iwi at elevations down to near sea-level (see text under KAHANA sub-section) (133, 134).

Island of Moloka'i

Early Notes and Records (1879-1923):

It is not clear whether the remark by Cassin (1858) crediting T. R. Peale with the statement that the 'I'iwi was "one of the most common species inhabiting most of the group of Hawaiian Islands" applied specifically to Moloka'i (1), however the comprehensive statement by Dole (1879) that this

species occupied the "whole group" (2) certainly did. The generalization a decade later by Wilson (1890) that the 'I'iwi was "perhaps the most noticeable forest-bird of the islands" appears to be the first specific remark on the relative abundance of this species (3).

According to his diary (Rothschild 1900), H. C. Palmer arrived on Moloka'i on 8 December 1892 and collected in the vicinity of Pūko'o, Hālawā, Pelekunu, and Makakupa'ia before departing for O'ahu on 25 February 1893. Rothschild (1900) related that "few" 'I'iwi were seen in the hills above Pūko'o on 12 December 1892, but that the "flower trees were full" of this species in the hills above Hālawā in forest much higher than Pūko'o in January 1893 (282, 283). Rothschild (1900) apparently included Moloka'i in his summary of the geographical distribution of the 'I'iwi in the Islands by stating that this species was "generally distributed over the various Hawaiian Islands (inhabiting) all wooded regions from the lower hills up to 8,000 feet or more" (4).

Perkins (field journal) visited Moloka'i in 1893, 1896, and 1902 taking two 'I'iwi specimens in unspecified localities (Banko 1979 report) (266, 267), recording this species "up" from Makakupa'ia on 13 May 1893, and observing "a number" on blossoming 'ohi'a trees near Pelekunu Pali on 27 June 1893 (272, 273). General statements by Perkins (1903, 1913) that 'I'iwi were "abundant in the forests" (of all the Islands) and "one of the most abundant...of all the Drepanid birds... found throughout the woods" (5< 269), presumably included their status on Moloka'i.

About 1895 Schauninsland (1900) recorded the presence of 'I'iwi near what is now Meyer Lake (271).

G. C. Munro collected one 'I'iwi specimen each on 29 October and 13 November 1906 but left no further written record of their status and distribution at that time (268).

During a two-months long bird collecting trip to Moloka'i from April to June 1907, Bryan (1908) obtained a total of 10 'I'iwi specimens, some in the following localities: Waihana (Waihānau), (1), Kilohana (3), Punalu (Punalau) (2), and Brown's Ranch (Pu'u o Hoku) (1) (Banko 1979 report) (274-276, 284). Bryan (1908) also left the most explicit statement on relative abundance and distribution of this species on the island of Moloka'i in early times, writing that it was, next to the 'Apapane and 'Amakihi, "the species most commonly met with", and that individuals "fly from one valley to another...in small loose flocks" (261). Commenting on the altitudinal distribution of this species Bryan (1908) stated that they "generally frequent the Ohia forests, but occasionally...extend their range down...as in the Wailau and Pelekunu valleys, so as to reach the sea-shore" (261). These observations were apparently incorporated in the more general

later statement by Bryan (1915) that 'I'iwi were to be found "in the forest on all the inhabited islands in favorable localities from near the sea-shore to the upper limits of the large forest trees (being) most abundant from two to four thousand feet elevation" (6,7). Atkinson (1977) wrote, based on statements by G. C. Munro, that this species had declined on Moloka'i from 1907 to 1923 to a point "close to extinction" (262).

Later Observations and Statements (1924 to 1963):

There seem to be only two statements pertaining to the status of 'I'iwi on the island of Moloka'i during the 40-year period 1924 to 1963. Munro (1944) no doubt had the 'I'iwi on Moloka'i partly in mind when he stated that this species was "originally extremely numerous...now greatly reduced" in the Islands (8). Donaghho (1963) quoted D. Woodside as saying that 'I'iwi may have been seen along the Wailau Valley Cliff trail, apparently during a 3-6 February 1948 survey in which Richardson (1949) reported positive detection of only two native forest birds - 'Apapane and 'Amakihi (277).

Recent Sightings and Reports (1964 to 1977):

While not actually reporting observation of 'I'iwi himself, Pekelo (1967) stated that "several persons claimed to have seen and heard" this species in unspecified localities on Moloka'i (269). In 1969 Hawaii Division of Fish and Game (1969 report) listed the 'I'iwi as a breeding resident of Moloka'i, but did not cite specific facts or their source(s) (270). Berger (1970) stated that this species was "probably extinct", and (1972) that it was "close to extinction" (263, 264). Pratt (1973) saw and heard only one 'I'iwi one mile north of Pu'ukolekole on 9 January 1972 during a two week field survey (278, 279). M. Mull (1972) proposed that the 'I'iwi on Moloka'i be considered a candidate for the Blue List (265). Scott et al (1977) recorded only one of this species during 43 ten-minute counts above Pu'ukolekole cabin and over 4050 ft. elevation, and one during 25 ten-minute counts in the same area below 4050 ft. elevation during a 21-25 July 1975 survey (280, 281).

Island of Lāna'i

In stating that 'I'iwi inhabited the "whole group" of Hawaiian Islands, Dole (1879) seems to have been the first to infer that Lāna'i was included in the range of this species, but said nothing about its relative abundance there (2).

Wilson and Evans (1890) made no specific mention of 'I'iwi on Lāna'i but did not exclude this island from a general statement that this species was "perhaps the most noticeable forest-bird in the islands" (Wilson 1890) (3). Rothschild (1900) is similarly silent on the status of 'I'iwi on Lāna'i

but goes on to include it in a general statement that this species was "generally distributed over the various Hawaiian Islands (inhabiting) all wooded regions from the lower hills up to 8000 feet or more" (4). Like S. B. Wilson and H. C. Palmer who observed and collected birds on Lāna'i before him, Perkins (1903) did not link 'I'iwi specifically to Lāna'i, stating only that this species was "one of the most abundant" of all the Drepanid birds and found "throughout the woods" (285).

Resident of Lāna'i for many years, G. C. Munro was apparently the only person who recorded impressions of the status of 'I'iwi populations there. Munro (1944) (Gregory 1924) reported that this species was "probably increasing" in a 1923 report to the Bernice P. Bishop Museum, at the same time acknowledging that it was "fairly common" and "diminishing year by year" (286, 287). In 1927, Munro (Gregory 1928) reported that this species was, if anything, "less in evidence" than previously; and, in 1928 (Gregory 1929) Munro stated that it was "rarely seen during the year" (289, 290). By 1929 Munro (1944) stated that the 'I'iwi had disappeared entirely" (291), and (Gregory 1930) that they had "disappeared...not one specimen seen" (292). In 1930 Munro (Gregory 1931) repeated that "none" were seen that year (293).

In 1969 Hawaii Division of Fish and Game listed the 'I'iwi as a questionable breeding resident of Lāna'i (294). Berger (1970) stated that this species was extinct on Lāna'i (295). M. Mull (1972) listed 'I'iwi on Lāna'i as a candidate for the Blue List, though remarking at the time that "it may be extinct" (269). Atkinson (1977) states that this species is "probably extinct" on Lāna'i (297).

Island of Maui

Early Notes and Records (1879 to 1901):

None of the early-day naturalists and ornithologists mentioned the population status of 'I'iwi specifically on Maui. It seems certain, however, that Maui was included in general statements on the relative abundance of this species recorded by most, if not all, of the early authorities. Cassin (1858) credits T. R. Peale as saying that the 'I'iwi was "one of the most common species inhabiting most of the group of Hawaiian Islands" (1). Dole (1879) listed the "whole group" of Hawaiian Islands as being within this species range (2). Wilson (1890) stated that the 'I'iwi was "perhaps the most noticeable forest-bird in the islands" (3). Rothschild (1900) wrote that this species was "generally distributed over the various Hawaiian Islands (inhabiting) all wooded regions from the lower hills up to 8,000 feet or more" (4). Perkins (1903, 1913) observed that this species was "abundant in the forests...one of the most abundant of all the Drepanid birds...found throughout the woods" (5, 298).

Finsch (1880) seems to have been the first observer to remark specifically on relative abundance of 'I'iwi in a given locality on Maui, noting in July 1879 that "many" were observed at about 5400 ft. elevation in the vicinity of Olinda (313). Wilson and Evans (1890) collected two 'I'iwi specimens on Maui in July 1888 - one in Kula District, probably near Olinda, but left no further record of their population status anywhere on the island (Banko 1979 report) (304, 314). H. C. Palmer (Rothschild 1900) noted one seen while encamped near "Mr. Hocking's house" north of Olinda in July 1892, and on 30 August 1892 logged "only a few seen" near Camp No. 2, apparently somewhere above Olinda (305, 315). Palmer also noted "a few seen" while at Camp No. 5 about 4000 ft. elevation in the "somewhat drier" middle 'ohi'a forest, Kīpahulu Valley, on 18 September 1892 (335). Perkins (Banko 1979 report) collected one 'I'iwi specimen at 5000 ft. elevation on Haleakalā, almost certainly near Olinda in 1894, and another in an unspecified locality on an undesignated date (306, 316). Later, in May 1896, Perkins (field journal) recorded the presence of 'I'iwi but not their relative abundance, during an ascent from near Waihe'e in West Maui "to top of mountain" (312). In June 1901 H. W. Henshaw collected 6 'I'iwi specimens on Haleakalā, 3 near Olinda and 3 farther up the mountain near Ukulele (317, 318).

Later Observations (1902 to 1959):

'I'iwi seem not to have been recorded for more than 25 years after Henshaw secured specimens on Haleakalā in 1901. In 1927 Gregory (1928) documented calls of this species being heard by G. C. Munro at 3000 to 4000 ft. elevation along one of the ridges on the northwest side of West Maui (310), and Munro's terming this species "not common" during four days spent in the heart of the forest" along Kula and Haleakalā from 4300 to 5000 ft. elevation (319). On a return trip the following year to trails along the Kula Ranch pipeline to the end of the flume at Haepuaena stream and Haleakalā Ranch pipeline to the Waiakamoi stream, Munro termed 'I'iwi "fairly common in the outer part of the forest, but not much in evidence in the very wet regions" during nine days spent in February 1928 (Gregory 1929) (321). Though his name is not on the labels of two specimens tagged "Olinda February 1928", Munro is the apparent collector (Banko 1979 report) (320).

There appears to be a gap of 'I'iwi records on Maui from 1929 to 1940. National Park Service reports recorded "more than 100" of this species estimated in a 5-acre grove of tree alfalfa (Escabon) (Cytisus proliferus) on Haleakalā Ranch below Pu'unianiau on 22 October 1941 (322). On a 5-day descent of Kīpahulu Valley from 19 to 23 February 1945, Hjort (1945 report) termed the 'I'iwi "quite common well into the forest" in the upper end of Kīpahulu Valley, observed "several" below 5800 ft. elevation, and "heard one" as low as 2700 ft. elevation (336-338). In the Ko'olau Gap area from

20-25 November 1945 Baldwin (1946 report) found 'I'iwi "relatively common" in the vicinity of 'Āinahou (?) in Ke'anae Valley, and saw "several" between Hōlua cabin and 4500 ft. elevation (357, 358).

In a descent of Kīpahulu Valley during the 29 November to 11 December 1945 period, Baldwin (1946 report) found the 'I'iwi from the upper fringe of forest down to 5050 ft. elevation where he termed it "common", recorded it as "fairly numerous" between 4200 and 3800 ft. elevation, present at 3400 and 2850 ft. elevations, and heard it "occasionally" down to 2600 ft. elevation - 100 ft. lower than Hjort's February findings (339-344). In February 1946 a National Park Service report states that 'I'iwi were seen in rain forest below Pu'unianiau but gives no information on relative abundance (333).

There appears to be a gap in 'I'iwi records on Maui during 1947, 1948, and 1949. In 1950 Richards (field journal) noted an unspecified number of this species on a 0830 to 1800 hours hike on 4 December from Palikū cabin to approximately 8000 ft. elevation north of Kaluanui, thence downslope between Pu'u'alaea and a small hill just west of it continuing for about one-half mile (369). On 5 December, Richards (field journal) estimated seeing "10-15" of this species in a 0700 to 1330 hours hike around a roughly five-acre tract of forest northwest of Pu'u'alaea at 6300 ft. elevation (328). On 6 December Richards (field journal) again estimated seeing "10-15" 'I'iwi on a 1430 to 1645 hours survey of about 3 to 4 acres of forest located just to the east and at the base of cliff, Palikū cabin (370). In 1951, Bonsey (1951) termed this species "occasional" from Waikamoi to inside Haleakalā Crater sometime during the 7 July to 11 September 1951 period (359).

There appear to be no records of 'I'iwi sightings on Maui during the 1952 to 1957 period. Eastman and Eastman (1958) apparently looked for this species during the Maui segment of their 23 March to 14 April 1958 inter-island tour, but were "unable to find" it in the undesignated areas visited (307).

Recent Sightings and Reports (1960-1978):

In 1961 Bole (1961) reported that he saw this species "in brush on flowering Sophora" in an unspecified locality sometime during the period 23 to 30 April 1961 (308). Stephenson and Stephenson (1961) saw "more" 'I'iwi in Hosmer Grove than on combined trips on O'ahu (360). Marrack (1962a) "heard one" in Hosmer Grove during the first two weeks of October (362). Dunmire (1961) termed 'I'iwi "fairly common" in Hosmer Grove and the forest behind Palikū, but mentions no date (324). Ashmole and Ord (1963) noted this species as "extremely abundant...second only to apapane in numbers" at 6500 ft. elevation in Kīpahulu Valley sometime during the period 11-14 April 1963 (345), and on the same trip found the

'I'iwi the "third most abundant species after apapane and creeper" in the rain forest about one-half mile west of Pu'u'alaia (329). They also noted presence of this species in the vicinity of Palikū cabin during this visit (371). On 9 November 1963, Anonymous (1964) termed 'I'iwi "abundant" in Haleakalā Crater but made no mention of the locality (309). Yocum (1968) noted 1 'i'iwi seen at Palikū on 10 July, 2 seen in Kīpahulu Gap on 12 July, 1 seen in a grove of 'ohi'a trees about two-thirds of the way up the pali back of Palikū cabin on 1 August, and 4 seen in the rain forest area of Kīpahulu near Palikū on an unrecorded date sometime during the July to August 1963 period (346-349).

In 1964 Ward (field journal) noted seeing 12 'I'iwi in an area near Pu'u'alaia overlooking "valley" (?Kīpahulu) - the only record that year (330). Speith (1966) termed this species "relatively abundant" along the Kula pipeline at 4000 ft. elevation near Olinda in July 1965 (325).

'I'iwi were included in the following account of drepaniids encountered in the 2-31 August ascent of Kīpahulu Valley given by Warner (1967 report): "no drepaniids whatsoever encountered below 860 m. (2800 ft.) elevation...at 860 m. drepaniids began to appear, but in extremely low numbers...from 860 m. to about 1050 m. (3300 ft.) steady increase in abundance of drepaniids with impression that amakihi and apapanes were most numerous, smaller numbers of creepers and decidedly fewer iiwis...from 1050 m. (3300 ft.) to 1950 m. (5000 ft.), based on subjective relative abundance scale of 0 to 10, iiwis were second (6) behind apapane (10), first...relatively large numbers of immature drepaniids noted...after a few days in the rain forest it became clear that impressions of relative abundance were misleading...iiwi being upper canopy dwellers and whose red marking was very similar to the ohia flowers made it difficult to examine in any quantitative way...from 1540 m. (5000 ft.) to 2260 m. (7350 ft.) elevation, based on a subjective relative abundance scale of 0 to 10 (not directly comparable to that of lower elevation), iiwis were judged 7, second after apapane 10...relative numbers increased...Broussaisia a principal food of immatures...adults spending most of their time in the ohia canopy...adult(s) also noted feeding on nectar of Trematolobelia macrostachys" (350). Warner (1977 report) summed up his impressions on 'I'iwi relative abundance at different elevations by stating that "few" were encountered at 2800 to 3300 ft. elevation, and in terming them "relatively common" at 3300 to 7350 ft. elevation (351-353).

Hawaii State Division of Fish and Game (1969 report) listed the 'I'iwi as a breeding resident of Maui in 1969 (299).

In 1970, King (field journal) noted "6 seen or heard" at 5800 ft. elevation on a ridge west of Waikamoi Gulch on 12

August, logged "several seen and heard" on the south side of Honomanū Gulch on 23 August, but noted "none seen or heard" at 6200 ft. elevation in three hours of observation on the south ridge above the south side of Kipahulu Valley on 4 September (326, 327, 355). Berger (1970) termed the 'I'iwi "still fairly common" on Maui that same year (300).

'I'iwi seem to have been recorded only twice on Maui in 1971. On 14 March, van Riper observed one at 6600 ft. elevation near Palikū cabin, and Hansen (1975) noted the presence of this species near the start of the downhill section of the Kaupō Gap trail on 24 August (372, 373).

In January 1972, Pratt (field journal) logged "a few pairs present" in Amalu Gulch, West Maui, at 3750 ft. elevation (311). Berger (1972) termed this species "still fairly common" on Maui where "in general, the birds are found at elevations above 2,800 feet" (301). M. Mull (1972) stated that 'I'iwi remain "moderately abundant in local native forests" on Maui (302).

'I'iwi seem not to have been recorded in 1973. In 1974 Shallenberger (field journal) termed this species "among five most common birds seen" down a forest trail as far as 6200 ft. elevation in the Hana Rain Forest Study Area during a 6 to 13 April trip (331). Later, Shallenberger (1974) rephrased his observation slightly for publication stating that this species was "one of five endemic forest birds most commonly heard and seen" in his 6-13 April visit to the Hana Rain Forest Project base camp area (332).

Scott and Sincock (1977) conducted a short survey of forest birds on 30 April and 1 May 1975 along the upper edge of the forest from 1860 to 2200 m. (6000 to 7200 ft.) elevation in the Ko'olau Forest Reserve recording "a total of 120 ('I'iwi) seen at 18 half-hour periods and stations", classing this species as "abundant" in the area (333). Stemmerman (Conant and Stemmerman 1979 report) "observed 1" ('I'iwi) about 1 mile from the nearest forest at Paliku, at 'O'ilipu'u in June 1976 (334). In 1977 Atkinson (1977) termed this species "fairly common" on Maui (303).

Conant and Stemmerman (1979 report) conducted a survey of forest birds in the Crater District of Haleakala National Park intermittently from June 1976 to August 1978, terming the 'I'iwi "rare...though not as uncommon as the Maui Creeper" having a "restricted distribution, limited almost entirely to wet forest" (356).

Island of Hawai'i

Early Notes and Records (1779 to 1903):

Though not met with alive, Cook (1784) first noted skins of this species brought by natives for barter on Kaua'i in

January 1778 (Stresemann 1950). A few months later, in March 1779 while at anchor in Kealahou Bay, Cook (1784) wrote of this species being of an "exceeding bright scarlet colour; the wings black, and edged with white; and the tail black; its native name is eeeve" (441). George Forster described the species a year later in 1780, from specimens collected by Cook's naturalists (Stresemann 1950).

'I'iwi seem to have been noted on Hawai'i only three times in the century following Cook's discovery of them on this island in 1779. T. R. Peale was credited by Cassin (1858) as stating that this bird was "one of the most common species inhabiting most of the group of the Hawaiian Islands" during observations made by the U. S. Exploring Expedition in 1840 and 1841 (1). Since the U. S. Exploring Expedition spent several months on Hawai'i it seems certain that this island was included in the previous statement on the basis of first-hand observations. The terse note by Dole (1879) that 'I'iwi occupied the "whole group" of Islands was the first comprehensive description of the range of this species (2). Presumably Dole referred only to forested islands. Members of the Challenger Expedition collected three 'I'iwi specimens "within 8 miles of Hilo" in August 1875, but seem to have left no record of exactly where they obtained their examples nor of the status of this species in the locality where they were obtained (Sclater 1880) (Banko 1979 report) (792, 793).

S. B. Wilson observed and collected forest birds on the island of Hawai'i in 1887 and 1888 taking 3 'I'iwi specimens at Waimea, 1 at Punalala (?) Waimea, 5 at Pu'uwa'awa'a, and 10 elsewhere in Kona District, 3 at Kilauea, 3 at 'Ōla'a, and 11 in unspecified localities (Banko 1979 report) (381, 389, 390, 410, 419, 604, 777). In Kona District, Wilson (1890) stated that on 10 June 1887 this species was found "in great numbers" among stunted 'ohi'a trees growing among the clinker beds of a comparatively recent lava flow at 5000 ft. elevation, and seen elsewhere in Kona at 6000 ft. elevation (407, 408). In the Wilson and Evans (1890) account it is merely noted that this species was "met with" at 6000 ft. elevation in Kona District (409). It is not known whether the statement by Wilson and Evans (1890) that 'I'iwi "frequently occurs" on the sea-beach when driven by high winds applies to the island of Hawai'i or not (380). Wilson seems to have left no further record of 'I'iwi on the island of Hawai'i except to note that this species was reported to be "abundant" at certain seasons of the year above Kalicha (Kalaieha) sheep station (Puu Oo Ranch) on Mauna Kea at over 6000 ft. elevation (Wilson 1890) (Wilson and Evans 1890) (806, 807). Overall, of course, the island of Hawai'i was included in the general statement by Wilson (1890) that the 'I'iwi was "perhaps the most noticeable forest-bird in the islands" (3).

W. Rothschild's collector, H. C. Palmer, observed and secured specimens of birds on the island of Hawai'i in 1891 and 1892. In contrast to S. B. Wilson, Palmer seems not to

have collected any specimens of 'I'iwi on this island but left several notes on their relative abundance and distribution. In November 1891 Palmer (Rothschild 1900) observed the 'I'iwi "on the mamane in great numbers" during a half-day's horse ride up Mauna Loa above Hōnaunau to over 9000 ft. elevation, and termed them "common" in the vicinity of Mr. Johnson's Hōnaunau dairy (now Ka'ohe Ranch?) about 6,000 feet above the sea and some 20 miles to the south of Pulehua (442, 450). It was apparently this area to which Palmer (Rothschild 1900) referred to the 'I'iwi as "always going about in pairs and being very plentiful" at elevations from 5,000 to 8,000 ft. (383). While encamped in the Kohala Mountains "a days travel from Kohala" in January 1892, Palmer (Rothschild 1900) noted seeing only "a few" of this species (388). On a hike up the Wailuku River on 12 and 13 April 1892 Palmer (Rothschild 1900) observed "many" near his camp, a 4 to 5 hour hike upriver from Hilo, terming this species the next day "pretty numerous" some 6 hours and 45 minutes travel from Hilo (794, 795). Rothschild (1900) quotes Palmer as saying that the 'I'iwi was observed apparently in the Hōnaunau, Kona area "always going about in pairs and being very plentiful" at elevations from 5,000 to 8,000 ft. (383). Rothschild (1900) presumably incorporated Palmer's 'I'iwi observations on the island of Hawai'i into an overall statement that this species was "generally distributed over the various Hawaiian Islands, (inhabiting) all wooded regions from the lower hills up to 8,000 feet or more" (4).

Perkins (field journal) observed and collected birds on Hawai'i in 1892, 1894, 1895, and 1896, and while he apparently did not seek or collect specimens of 'I'iwi on this island (Banko 1979 report), he did record a few notes on their relative abundance and/or distribution in certain areas. In June 1892, apparently while collecting on the Greenwell Ranch near Ka'awaloa, Perkins (field journal) used the term "hordes" to describe numbers of 'I'iwi encountered at about 2500 ft. elevation (411). Later, in writing of impressions gained from observations made from June to October in the vicinity of Ka'awaloa, and at higher elevations around Pu'u'ulehua, Perkins (1893) wrote that the 'I'iwi was "extremely common (and) extremely wide-ranging, far more so than the crimson form" ('Apapane, Himatione sanguinea), and that this species "even comes into the lots in front of the houses (? ca. 1500 ft. elevation), visiting the peach and rose trees" (414). On the windward side of Mauna Loa, on the 23rd of July 1894, Perkins (field journal) listed the 'I'iwi as one of the species seen on a "very long day's tramp up the side of the mountain from Kilauea", and recalled in a 19 September 1947 letter that it was "very abundant" up to 1896 within 1 1/2 to 2 miles of the Volcano House (605, 606). Perkins (1903, 1913) wrote later that this species was "abundant" in the forests of all the islands and "one of the most abundant...of all the Drepanid birds found throughout the woods (5, 374).

Though leaving no written information on the population status and range of the 'I'iwi, several itinerant specimen collectors are known to have secured examples of this species on Hawai'i during the latter part of the early period from 1894 to 1903 (Banko 1979 report). A. Koebele collected three specimens in Kona in 1894 (412). B. Arnold secured one specimen of 'I'iwi each at 'Ōla'a and Kea'au in 1898 (788, 789). The name "Hitchcock" is on the label of one specimen dated 1900 taken in 'Ola'a (780). In 1901, A. M. Walcott secured 6 specimens of this species at Kilauea, 1 at Kaiwiki, and 1 in an unspecified locality (384, 607, 830). A. Seale also collected 5 specimens at Kilauea in 1901 (608). H. W. Henshaw collected 'I'iwi specimens from 1897 to 1902 in the following numbers and places: Pu'uulehua Ranch (1); Pāhala (3); Kapāpala (1); 'Ōhaikea (houses), Ka'ū District (1); Volcano House (3); 'Ōla'a, 2400 ft. el. (1); 'Ōla'a, unspecified elevation (37); Kaūmana (4); Kaiwiki (13); and Kuaia (near Laupāhoehoe) (3) (432, 458-460, 751, 781, 782, 796, 831, 834). McGregor (1902) took no specimens but stated that he saw 'I'iwi at the Volcano House in October "on more than one occasion" (609). In 1902 L. H. Miller (field journal) collected one specimen on 23 December in 'ohi'a and koa forest at 800 ft. elevation in the vicinity of the Chester Blacow Ranch above Laupāhoehoe about 10 miles, and on 31 December heard "a male in full song" in the section of the Blacow ranch area known as "Paradise" (832, 833). One specimen collected by Miller on an unspecified date and month was taken near Pa'auilo in 1902 (Banko 1979 report) (837). The name of (C.) Blacow is on the label of an 'I'iwi specimen marked with the locality name Pa'auilo and the year 1903 (Banko 1979 report) (838). Blacow's name is also on the labels of 9 specimens taken on Horner's Ranch ('Umikoa) in 1903 at the following elevations: 4000 (3), 1600 (2), 8000 (4) (835). C. M. and M. L. Walton collected 6 'I'iwi specimens on unspecified dates and in undesignated localities, probably near Na'ālehu and/or Pāhala in the late 1890's or early 1900's (Banko 1979 report) (451).

Kohala District, 1904 to 1978

There seem to be only two references to 'I'iwi in Kohala District after S. B. Wilson collected specimens near Waimea in 1887/1888, and H. C. Palmer's note that he saw a few while encamped a day's travel from Kohala in January 1892.

Pratt (1967) recorded their presence on an unspecified date, apparently in 1967, in the rainforest about a mile from Hawaii Preparatory Academy (391), while van Riper (field journal) made a series of observations of this species in the same general area as Pratt, and in other localities in the Kohala Mountains in 1971 and 1972. Observational notes of 'I'iwi seen and/or heard during field work by van Riper in the "Kohala Study Area", from 3000 to 3500 ft. elevation on the south flank of the Kohala Mountains, from 23 January 1971 to December 1972, is presented in Table 2.

Table 2.

'I'iwi Detected in "Kohala Study Area" by van Riper
in 1971 and 1972

<u>Record No.'s</u>	<u>Numbers Detected</u>	<u>Hours of Observation</u>	<u>Date</u>
392, 393	5 seen, 1 heard	5 1/2	23 Jan 1971
394	5 seen, 2 heard	5	24 Jan 1971
395, 396	2 seen, none heard	6 3/4	23 Feb 1971
397	none seen, 2 heard	1	13 Mar 1971
398	3 seen, 1 heard	4	19 Mar 1971
400	3 seen, 2 heard	3	12 Apr 1971
401	2 seen, 4 heard	5	10 May 1971
404	none seen or heard	15 1/2	23 May; 25, 29 Jun 16 Jul 1971
405	5 seen, 4 heard	5 1/2	13 Jan 1972
406	none seen or heard on multiple study/ survey trips	0	Sep-Dec 1972

Numbers of 'I'iwi detected by van Riper are thus shown to fluctuate from a maximum of 9 in 5.5 hours of observation on 13 January 1972 to none seen or heard on multiple field trips from September to December 1972. According to the limited data presented in Table 2, 'I'iwi were apparently found in van Riper's study area only during the late winter and early spring months, and then only in relatively small numbers.

Van Riper (field journal) also noted 'I'iwi at other locations in the Kohala Mountains, recording 3 seen on a 0700 to 1600 hours hike along Hāmākua ditch up to and through the head-waters of Kawai Nui stream on 22 March 1971 (399). One 'I'iwi was observed on a 5-hour hike along Kihena (Kehena) ditch on 8 July 1971, but none were detected the next day for an unspecified number of hours along the same trail (402, 403).

Kona District, 1904 to 1978

'I'iwi seem to have gone unrecorded in Kona District from 1894 when A. Koabele collected three specimens, until G. C. Munro (Gregory 1924) reported (from only hearing) this species in forests of Pu'uwa'awa'a Ranch that they were "not numerous" there in 1923 (415). Since G. C. Munro spent some months collecting birds with H. C. Palmer in Kona District in 1891, his observations of 'I'iwi in similar habitat in 1923, and again in 1935 undoubtedly influenced his later generalization that this species "originally extremely numerous" in the Hawaiian Islands was "now greatly reduced" (Munro 1944) (8).

Donaghho (1937 report) termed the 'I'iwi "common" on Hualālai in 1935 (413). As a result of his 1935 visit, Donaghho (1937 report) commented that this species migrated up to the mamane forests on Hualālai and Mauna Kea "when sufficient food offers" (386). Donaghho (1940b) visited Hualālai again in May 1940, reporting this species to be "unusually common" in the upper koa forest and "not uncommon" in the mamane belt along the south flank of Hualālai (416, 417). Donaghho's comment that 'I'iwi were "absent" above the 5,000 ft. elevation level in an unspecified locality in May 1940 may have referred to his visit to Hualālai (385).

P. H. Baldwin carried out several forest bird surveys in Kona District from 1942 to 1949. From 19 to 21 November, Baldwin (field journal) recorded the presence of 'I'iwi east of Ahua 'Umi Heiau, termed this species "locally common" from Pu'ulehua Ranch house up to about 6300 ft. elevation on Mauna Loa about 4 1/2 miles directly east, found them "in good numbers" at 5600 ft. elevation directly east of the ranch house, and quoted ranch foreman Baybrook, a 20-year veteran of Pu'ulehua Ranch, as saying 'I'iwi had "always been numerous" on the Kealakekua lava flow south of Pu'ulehua around 5,100 ft. elevation (433-436). Baldwin (field journal) commented that 'I'iwi were "less numerous" in suitable habitats over 5,000 ft. elevation on Pu'ulehua Ranch than in Hawaii National Park "when Kipuka Kulalio is in good form" (387). Later, as a result of his 1942 visit, Baldwin (1944) termed 'I'iwi "common" in the Pu'ulehua Ranch area (437).

P. H. Baldwin returned to survey birds in three types of dry forest in the upper reaches of Kīpuka Kalawamauna, Pu'uanahulu, Kona District, on 15 April but found no 'I'iwi (420). In and near McCandless Ranch and the Hōnaunau Forest Reserve from 29 February to 4 March 1944, Baldwin (1944 report, 1969) recorded the presence of 'I'iwi without comment on their relative abundance, on hikes from Hapu Camp to Lumiawai waterhole, and in Hōnaunau Forest Reserve between 4500 and 5000 ft. elevation, noted "many" in the southeast section of the Forest Reserve from 4250 to 4800 ft. elevation (443-446). On a hike up to the summit of Hualālai, which crossed the Pu'uwa'awa'a line on a route slightly west of south from Po'ohoho'o, Baldwin (1969) first recorded 'I'iwi as "numerous" and then "left behind" on his ascent sometime during the period 16 to 21 November 1944 (421). Returning to Hualālai for the last time on 9 September 1949, Baldwin (1944 report, 1969) logged this species "seen and heard", but "not so abundant" at 4121 ft. elevation in a grazed forest in the vicinity of a volcanic cinder cone above Huehue Ranch Headquarters as above Po'ohoho'o on Pu'uwa'awa'a Ranch (418, 431).

L. P. Richards, surveying forest birds in Kona District in 1950 and 1951, recorded the following 'I'iwi observations in his field journal. On 24 August 1950, Richards termed the

'I'iwi "common" along the trail on the Greenwell Ranch from Papaloa to Pulehua ranchhouse (438). The next day, on a trip by horse from Pu'uwa'awa'a ranchhouse to Shangrila and a hike 1/4 mile beyond, he logged the 'I'iwi in "great numbers...judge 10 or 12 seen in area about 400 yards in diameter" on 254 August 1950 (422). The next day Richards termed 'I'iwi "especially noticeable by their absence" half-way between Po'ohoho'o and Pu'unāhāhā (to the west of Shangrila) (423). Near Shangrila again from 26 to 28 September 1950, he found this species "very plentiful, possibly 15 or 20 seen and more heard" at from 4250 to 4600 ft. elevation (424), present in unspecified numbers along the trail ranging 4250 to 8250 ft. elevation from Shangrila to the summit of Hualālai (425), and recorded their presence from 4250 to 4500 ft. elevation south of Shangrila on 28 September 1950 (426). Returning to the north slope of Hualālai for the last time on 20 and 21 October 1950, Richards recorded the presence of 'I'iwi both days from 4250 to 4500 ft. elevation in the Shangrila area up to 1/4 mile south of the cabin (427). The presence of this species was noted by Richards during a 1300 to 1830 hours hike on 20 November 1950 on McCandless Ranch from about 1/2 mile past Hapu Camp along the truck trail to Keanapa'akai, thence to Kaunene, thence about 1/2 mile toward Komakawai (447). On 21 November, he termed this species "rather plentiful, perhaps 30 seen", during a 0730 to 1800 hours hike from 4550 to 6250 ft. elevation along the truck trail on McCandless Ranch from Hapu to Keanapa'akai to Kaunene (448). On 22 November 1950 Richards recorded the presence of 'I'iwi on a hike from Hapu to Gaspar's Dairy along the east boundary of the Hōnaunau Forest Reserve (449). On 11 January 1951 Richards noted 'I'iwi to be "fairly abundant" from 4850 to 5150 during a 0930 to 1720 hours hike in North New Field and South New Field one to three miles south of Pu'uulehua in North Kona (439).

C. van Riper recorded observations and impressions of 'I'iwi numbers on Pu'uwa'awa'a Ranch and at Pu'uulehua in 1971 and 1973. Hiking the north and/or west facing slopes of Hualālai on Pu'uwa'awa'a Ranch on 11, 12 and 13 February 1971, van Riper recorded "2 observed", "one observed", and "3 observed" on successive hikes from 0800-1300, 0800-1215, and 0730-1200 hours (428-430). Writing later of 'I'iwi relative abundance in the Pu'uulehua Ranch area, van Riper (1973) stated that the species could still be found "but their numbers have been greatly reduced" (440).

Ka'u District, 1904 to 1978

In POHUE BAY quadrangle, there seem to be only two records of 'I'iwi, the report by Baldwin (field journal) that he heard "lots" in the forest along the road in Manukā Forest Reserve on 8 September 1949, but recalled "none around here last spring" (452), and a note by Yuen (1970) that this species was "heard but not seen" above the camping and eating areas in Manukā State Park on 9 November 1969 (453).

There seem to be only four records on 'I'iwi in PUU O KEOKEO quadrangle during the period 1904 to 1978. Baldwin (1969) recorded the presence but not numbers of this species at 6000 ft. elevation on a hike through Kīpukanēnē (Kahuku) on 16 March 1944 (454). Richards (field journal) termed them "plentiful" at 5800 ft. elevation in Kīpukanēnē, at 5300 ft. elevation in Kīpuka'ākala (?), and along the Kahuku - 'Ainapō trail on 3 November 1950 (455). Donaghho (1968b) wrote that on 27 December 1967 one was "called up after brief noon foray afield" along the Kahuku - 'Ainapō road where the 'ohi'a forest came up to the road (456), and Orenstein (1968) noted that "three or four" were detected the same day along the Kahuku - 'Ainapō trail (457).

In KILAUEA CRATER quadrangle, adjacent to Hawaii Volcanoes National Park, W. R. Donaghho and P. H. Baldwin logged most of the 'I'iwi records between 1937 and 1948. In 1937 on 16 June, Donaghho (1937 report, 1947a) recorded a pair of 'I'iwi "in the spoiled forest of 'Ohi'a, Kopiko, and Koa under which the undergrowth had been cleared by cattle (near) the high bank in the rear of Brown's Camp rear pastures", and "heard 3" along the Bridle Path north of the Volcano House thence through Brown's Ranch to the Pu'u 'Ō'ō trail (461, 462). On 30 June Donaghho (1937 report, 1951a) "saw 48 and heard 92" 'I'iwi on a hike from Kīpukapuaulu north into Brown's Ranch koa forest, thence southeast to fenceline and return via tanks and ranchhouse (7 miles), and "found quite a few" along Keauhou Ranch Forest Reserve fence as the 'ohi'a and other trees became more numerous (463, 464). Recording results of the 30 June hike a second time, Donaghho (1951a) noted "quite a number" of this species in a mixed forest on Keauhou Ranch in the vicinity of Bird Park, and "found numbers" in a dense forest of second-growth 'ohi'a intermixed with large 'ohi'a and koa on a hike from Kīpukapuaulu along the Keauhou Ranch Forest Reserve fence (465-467). On 20 July, Donaghho (1951b) logged "2 adults, 2 young seen" in Kīpuka Kauaiu toward the 1881 flow (468), and on 9 August "one seen" in a clump of 'ohi'a and mamane at 6000 ft. elevation near the old stone wall on the flanks of Mauna Loa above the end of the Peter Lee Road (Donaghho 1951d) (469). On 26 August Donaghho (1951f) met with 'I'iwi in the 'ohi'a stands on Keauhou Ranch north of Kīpukakī, and recorded them as "now numerous...(where they were) not noticed on the first trips (in July) (470, 471). On 11 September Donaghho (1951f) saw and heard "a number" along the edge of the koa rain forest at the beginning of the Pu'u 'Ō'ō trail from Keauhou Ranch to Mauna Kea, Kūlanī Cone and Lala'au being visible (472, 473).

There seems to be only one record of 'I'iwi in KILAUEA CRATER quadrangle in 1938, that of Baldwin (field journal) who on 10 September found them "plentiful as seeds on a strawberry...more common than I had ever found them to be elsewhere" in a section of forest a 2-hour horseback ride through Keauhou Ranch from Bird Park toward Keawewai where he

arrived at noon (474). A few months later on 1 January 1939, Baldwin (field journal) stated that 'I'iwi "varied greatly in numbers from kīpuka to kīpuka, from none to many seen and heard" in a 10-mile hike from 0930 to 1700 hours north from Park boundary above Kīpukakī through Kīpukakēkake and adjacent country in Keauhou Ranch (475).

'I'iwi seem not to have been recorded in KILAUEA CRATER, outside the Park from 1940 to 1947, but on 19 October 1948 Baldwin (field journal) heard one on a field trip from Kīpukakī uphill across 'ā'ā lava on Keauhou Ranch and return (476). They were not noted in 1949, but on 29 October 1950 Richards (field journal) logged them as "very plentiful" from 1030 to 1800 hours on Keauhou Ranch along Old Koa Mill Road toward Kīlauea Forest Reserve boundary on a hike beginning an estimated two or more miles from Ranch Headquarters (477).

'I'iwi were not recorded in KILAUEA CRATER quadrant outside the Park from 1951 to 1954, but on 1 January 1955 Anonymous (1955) noted that nine were censused along the Nobriga (Keauhou) Ranch Road during the 1954 Christmas Count (478). On the 31 December 1955 Christmas Count, Anonymous (1956a) logged the censusing of 32 along the Keauhou (Nobriga) Ranch road, 8 hours being expended on foot and 1/2 hour by car (479).

In KULANI quadrangle, Donaghho (1951b) - on a long hike on 2 July 1937 from about 6700 ft. elevation on Mauna Loa trail down to Keawewai water tank and into koa forest thence making a "C" and out again going south and down to Brown's Ranch - recorded the presence of 'I'iwi in and at the edge of the forest at Keawewai water tanks and in koa kīpukas in the pasture area (481, 482, 484). On the same hike Donaghho (1937 report, 1951b) logged this species "heard and seen frequently in scattered groves on 'O'hia and Koa...near Keauhou Ranch Headquarters", finally tallying 7 seen and 34 heard on the entire hike (480, 483).

On 12 September Donaghho (1951g) noted hearing 'I'iwi along the Pu'u 'Ō'ō trail just above Keawewai, seeing them only "occasionally...no large numbers" from the end of the koa forest, along the trail past Keawewai toward Mauna Kea (485, 486).

In 1938, Baldwin (field journal) noted seeing "several" by 0630 hours in the Keawewai cabin area, and a "band of 3 or 4 and several others seen" near the Pu'u 'Ō'ō trail, at Puu Kaipu (487, 488). No 'I'iwi were recorded in KULANI quadrant in 1939 and 1940, but on 6 August 1941, Baldwin (field journal) recorded the presence of this species only without indication of relative abundance in the Keawewai area (489).

There is a six year gap of 'I'iwi records in KULANI quadrangle from 1942 to 1947. On 22 October 1948 Baldwin

(field journal) found this species "but not many" from 7000 to 7250 ft. elevation on a hike from the end of the Strip Road to 7500 ft., and across Keauhou Ranch to the first kīpuka down to 7000 ft., and return along the contour (490). Two days later on 24 October, Baldwin (field journal) noted seeing this species in 'ohi'a - koa kīpukas southwest of Keawewai from 6900 to 7300 ft. elevation, calling the first kīpuka northeast of the Park boundary "the best place around here" to observe 'I'iwi (491, 492). On the same hike Baldwin (field journal) also observed 'I'iwi in a mixed flock with other drepanidids in large Koa clumps in understory of naio, Metrosideros and Styphelia (493). In 1949, Baldwin (field journal) found this species present in a 10 May hike along the north base of Kūlani Cone, and collected an unspecified number of specimens on a 12 September trip through sparse 'ohi'a forest from the junction of the Kūlani Prison road and 1942 lava flow up to Pu'u 'Ō'ō trail, and south to Solomon's waterhole (494, 495).

A total of 38 specimens of 'I'iwi were collected in KULANI quadrangle by P. H. Baldwin and L. P. Richards from 1948 to 1950 (Banko 1979 report). In 1948 and/or 1949 Baldwin obtained 37 examples in the following localities: 11 in Kekekaniho, Keauhou, 5000-7000 ft. elevation, 22 in Keauhou, 4100-7300 ft. elevation, and 4 in Keauhou Ranch at 5500-6800 ft. elevation (496-498). Richards collected one specimen at 7350 ft. elevation at Pu'u Lā'au in upper 'Ōla'a (? Kīlauea) Forest Reserve sometime in 1950 (499).

There is an apparent gap in 'I'iwi observation records in KULANI quadrangle from 1951 to 1959. Eisemann (1961) termed this species "common...aggregate numbers exceeded a hundred" during his 17-19 June 1960 visit to Keauhou Ranch (500). Dunmire (1960) stated that 'I'iwi were "definitely abundant" in koa parkland on Keauhou Ranch behind the Park (501). A two-year gap of 'I'iwi observations follows the statement by Dunmire in 1960. P. Brodkorb labeled a locality where he collected a single 'I'iwi specimen on 30 April 1964 as "Kulani" (Banko 1979 report) (502). In 1966 Berger (1966) termed this species "common" in forests bordering the Kūlani Prison Road downslope from 5200 to perhaps 2000 ft. elevation on 23 January 1966 (503). On 28 May 1966 Donaghho (1966b) recorded this species as "seen" near the Kūlani Prison Camp guest cabin, and as present on the lower slope of Kūlani cone (504, 505). Later, in October, Ward (field journal) noted two seen in the Pu'u Lā'au area (506).

Donaghho (1968b) "met with and studied" the 'I'iwi in the forest along the edge of Stainback Highway and base of Kūlani Cone on 24 December 1967 (507), following which there was a four year gap in records, from 1968 to 1971.

A. J. Berger conducted some 22 censuses of small forest birds along the adjacent Transects 1, 2, 3, and 4 of the International Biological Program's 200-acre Study Plot in the Kīlauea Forest Reserve from 11 January to 20 July 1972 (Berger

1972 report). Information on numbers of 'I'iwi on all transects has been combined by month, segregated according to season, Winter (January and February) or Spring-Summer (March to July) and listed with total number of hours expended per month in Table 3 below.

Table 3.

Numbers of 'I'iwi Censused in I.B.P. Study Area in 1972

<u>Record No's</u>	<u>Winter</u>	<u>Spring-Summer</u>	<u>Hours</u>	<u>Ave./Hour</u>
508, 509	0		3.4	-0-
510, 511	0		2.3	-0-
512, 513	11		4.3	2.5
514, 515	12		4.0	3.0
516, 517		14	3.8	3.7
518, 519		22	3.9	5.6
520, 521		23	3.8	6.1
522, 523		7	3	2.3
524, 525		5	2.8	1.8
526, 527		0	2.5	-0-
528, 529		5	2.2	2.3

Analysis of data in Table 3 shows that 'I'iwi populations varied seasonally in the I.B.P. study area during the first seven months of 1972, being absent until late winter, increasing gradually until late spring and declining to a stable few during the summer.

Later in 1972, Gagne (1973) reported that 107 'I'iwi were censused in the Kilauea Forest Reserve, and 10 in Keauhou Ranch and Volcano Golf Course areas during the 30 December Christmas Count (530, 531). This Christmas Count revealed some 35 'I'iwi censused in Kilauea Forest Reserve, and 23 on Keauhou Ranch (Mull 1974), while the count for 14 December 1975 detected 91 in Kilauea Forest Reserve and 188 on Keauhou Ranch (Mull 1975) (532-535). The 1972, 1973 and 1974 Christmas Count data are not directly comparable due to differences in census methodology, number of observers, hours conducted, etc. MacMillen and Carpenter (1980) concluded from their 1972 to 1978 studies that 'I'iwi (and 'Apapane) make regular evening flights in mixed flocks above Metrosideros forest canopy during the summer on one occasion (26 July 1974) estimating that 42,000 'Apapane and 'I'iwi (the former far outnumbering the latter, were seen during a 1.5 hour flight from observation stations at 1,350 and 1,850 m. elevations some 7.6 km. along the Pu'u 'Ö'Ö trail toward Mauna Kea from the Headquarters, Keauhou Ranch (533a).

There were a number of observations of 'I'iwi noted in 1975. On 19 August, Pratt et al. (1977) "saw only a few" in a five hour survey of forest birds along the boundary fence between Kilauea Forest Reserve and Keauhou Ranch approximately

11 miles northwest of Volcano (536), while on 4 October Donaghho (1975) found them "evident" in Kīlauea Forest Reserve near Keawewai, and logged "one seen" in Keauhou (Ranch) in the same general area (537, 538). Conant (1975 report), completing a series of monthly censuses in and near Hawaii Volcanoes National Park from December 1972 to July 1973, and from August 1974 to March 1975, computed that there were 128 'I'iwi per 40 ha (98.8 acres) with 100% occurrence frequency on Transect 92 in upper Keauhou Ranch, and 131 per 40 ha with 100% occurrence frequency in Transect 91 located nearby in Kīlauea Forest Reserve (539, 540).

'I'iwi seem not to have been recorded in KULANI quadrangle outside Hawaii Volcanoes National Park in 1976 or 1977, and in 1978 only during the 2 January Christmas Count. Katahira (1978) compiled census results of the 2 January 1978 Christmas Count as follows: 47 along Transect 27 in Waiākea Forest Reserve, 178 along Transect 28 downslope, and 121 along Transect 28 upslope in Kūlani Project, 131 along Transect 29 somewhere in Keauhou Ranch, 31 in Keauhou Ranch along Transect 30, 8 along Keauhou Ranch Transect 30 in Kīlauea Forest Reserve, 6 along Keauhou Ranch Transect 31 in Kīlauea Forest Reserve, 93 in another area of Keauhou Ranch, and 11 somewhere in Kīlauea Forest Reserve in Keauhou Ranch (541-550).

Hawaii Volcanoes National Park, 1904 to 1978

'I'iwi seem not to have been recorded in Hawaii Volcanoes National Park from 1904 to 1935. Williams (1936) was apparently the first to comment on the distribution of this species in the Park, noting that it was "rarely seen" in the lower sections of the Park except during the season when the Metrosideros polymorpha ('ohi'a lehua) was in bloom (564).

H. G. Craddock and W. R. Donaghho recorded the population status and distribution of 'I'iwi in a number of localities in the Park in 1937. High up on the slopes of Mauna Loa in PUU ULAULA quadrangle, Donaghho (1937 report, 1947a) "saw 1, heard 2" of this species along Mauna Loa truck trail (Strip Road) between 6000 and 7000 ft. elevation on 16 June 1937, and on 24 June noted "saw 7, heard 6" up Manua Loa trail through and above large kipuka from 5500 ft. elevation, seeing 2 near the trailhead (573, 575).

Lower down on Mauna Loa and around Kīlauea, in KILAUEA CRATER quadrangle, Craddock (1937 report) and Donaghho (1937 report, 1947a) recorded many observations of 'I'iwi from June to August 1937. On 14 June they singly or together logged "a few" heard, and "up to 4 seen" in Kīpukapuauulu (Bird Park) (610-612). On 18 June Donaghho (1947a) saw "a pair" in a forest of 'ohi'a and mamane on an old lava flow along the Mauna Loa Strip Road at about 5000 ft. elevation (613, 614). On 20 June Donaghho (1947b) and Craddock (1937 report) saw 2 'I'iwi in Bird Park (615), and on the 24th the latter "saw 6"

between 4500 and 5000 ft. elevation along the Mauna Loa truck trail, and another apparently in the same general area (617, 618). On 30 June, Donaghho (1937 report, 1951a) found this species "in increased numbers" in Kīpukapuāulu, seeing 3 and hearing 12 (619, 620). Craddock (1937 report) "saw 5" in Kīpukapuāulu on 7 July 1937, while Donaghho (1937 report, 1951b) reported it "not rare" in that area, logging "saw 4, heard 31" in going clear around Kīpukapuāulu on the same day (621-623). The next day, on the 8th, Donaghho (1937 report) "saw 25, heard 56" in making another complete trip around Bird Park (624). On 9 July Craddock (1937 report) "saw 3" of this species there (625). On 20 July Craddock (1937 report) and Donaghho (1951b) recorded 'I'iwi on the slopes of Mauna Loa near the truck trail, the former seeing one and the latter recording their presence in a kīpuka of mixed koa, 'ohi'a and mamane on the way from Kīpuka Kaunaiu to Cache No. 2 along the Strip Road (626-628). In late July, Donaghho (1937 report, 1951c) termed 'I'iwi "numerous" on a horseback trip he took from the corral above Kīpukakī down Mauna Loa trail through koa, 'ohi'a, mamane, naio kīpukas on rough lava, stating from observations made on this and previous visits to the area that the species "suddenly appeared in small numbers", invading Bird Park and many areas south of this locality around Kīlauea Crater (629-631).

Only Donaghho (1937 report, 1951 e, f) seems to have recorded 'I'iwi in the Park in August, noting 2 and 1 seen on separate occasions on Mauna Loa near the Truck Trail (Strip Road) on the 9th, terming this species "quite common still" in Bird Park on the 19th, and noting "a few" at the 'Ohi'a grove one enters after coming off the lava flow on the east at Kīpukakī on the 20th. (632-635). On 26 August, Donaghho (1951f) recorded the presence of 'I'iwi near the giant Koa above Kīpukakī, in the forest on 'ā'ā lava along the Mauna Loa trail beyond the pasture above the giant koa, in a stand of mixed koa, 'a'ali'i, mamane and 'ohi'a near the stone wall coming from the corral above the pasture above the giant koa, and "saw many...heard many others" in a stand of large 'ohi'a trees near the giant koa (636-639).

W. R. Donaghho recorded the 'I'iwi on a number of occasions during the summer of 1937 near the former CCC camp at Kīlauea Iki. Donaghho (1951b, d, e, f) stated that he was "surprised to hear 1" there on 19 July, recorded them "still about" on 10 August, "have disappeared lately" on 15 August, "pair seen" near Twin Craters (Thurston Lava Tube), and "notably common" near Byron's Ledge and Kīlauea Iki on 20 August, and "saw 2" (in ? September) (704-709).

Further downslope, in MAKAOPUHI CRATER quadrant, Craddock (1937 report) "saw 12" in hiking the Kalapana Trail to the fence, along the fence to Nāpau Crater and back along the trail to the road on 23 June (729). The same day and in the same area, Donaghho (1937 report, 1947b) "heard 5 and saw 2"

'I'iwi on a hike (perhaps with Craddock) down Kalapana Trail along the Park fence line and up to Nāpau Crater trail and "noted several, saw 2" in the 'ohi'a forest with 40 ft. high trees south of the trail to Nāpau Crater (730, 731). On 25 June Donaghho (1951a) noted one heard while descending Makaopuhi Crater from Kāne Nui O Hamo (732).

In KAU DESERT quadrangle Donaghho (1951d) recorded "1 seen in company with several immature Apapanes" along trail to Mauna Iki; "several seen, all immatures" in 'ohi'a kīpukas on Mauna Iki; and "one seen and heard" in the Park forest on hike from southernmost cone along the SE Rift of Kīlauea to the Belt Highway, all on 4 August 1937 (722-725).

H. G. Craddock and W. R. Donaghho summed up their impressions of relative abundance and distribution of 'I'iwi in the Park at the conclusion of their field work in 1937. During the period 12 to 30 June, Craddock (1937 report) stated that he saw only 22 'I'iwi "about half as many" of this species as 'Elepaio near Nāpau Crater, in Bird Park, and in two kīpukas near Bird Park (565). Donaghho (1937 report) termed the 'I'iwi "quite common" in the wet and semi-wet koa forests behind Bird Park and Keauhou Ranch, and "generally absent" about Kīlauea volcano during the June to August period, stating in summary that this species was "found pretty commonly in some areas...rare or absent from others" (551, 640, 641). In the last note of 'I'iwi in 1937, H. Baldwin et al (1938) recorded 11 of this species logged during the 18 December Christmas Count by four observers in one party, hiking 10 miles on foot through Kīpukapuaulu and the Golf Course to KMC, through Kīlauea Iki Crater, but omitting the area between KMC and Kīlauea Iki (642).

Except for the 18 December Christmas Count which will be cited last, only P. H. Baldwin seems to have noted 'I'iwi in the Park in 1938. On 3 August, Baldwin (field journal) saw "several" and heard "about 8 or more...first positive evidence I have obtained below 4,000 ft. in the Park" along a trail north of the 1840 Lava Flow (Lava Trees), north of Nāpau Crater (733). On 25 November, Baldwin (field journal) logged a "barrage of 'I'iwi notes...singing everywhere...abundantly...saw 3 in one tree and heard numbers more in nearby trees" throughout the inner border strip and where the mamane trees were blooming in Kīpukakulalio at 5500 ft. elevation near the Mauna Loa Truck Trail (643). The same day he observed that this species "markedly increased" along a walk west, south and return to "Camp 5,500" in Kīpukakulalio near the Mauna Loa Truck Trail (602). On 27 November, Baldwin (field journal) recorded hearing one at 6250 ft. elevation in the koas on the edge of the lava flow in the vicinity of the Mauna Loa Truck Trail (576, 577). On the 18 December Christmas Count, H. Baldwin et al (1939) recorded that five observers in one party reported a total of 6 'I'iwi seen in 10 miles hiked, from Kīpukapuaulu through adjacent Golf Course to KMC, and through

Kīlauea Iki Crater, but excluding the area between KMC and Kīlauea Iki (644). Later, on 31 December, Baldwin (field journal) noted sighting one 'I'iwi at 0855 hours in Bird Park (645).

In 1939 as in 1938, except for results of the 17 December Christmas Count, P. H. Baldwin seems to have been the only observer reporting 'I'iwi in the Park. Apparently recording results of a personal conversation on 1 January 1939, Baldwin (field journal) credited Dr. Jaggar (resident volcanologist) with saying that 'I'iwi "have become diminished in numbers in the Park" (552). On 4 February Baldwin (field journal) recorded seeing and hearing "a number" of this species at 5900 ft. elevation near a clump of koa off the Mauna Loa Truck Trail (601), and on the same day near the old 5500 ft. elevation campsite saw one and heard others (646-648). Covering much the same ground on 6 February Baldwin (field journal) recorded "many" along the Truck Trail at 5500 ft. elevation (649), "very few heard" at 6200 ft., and "several" in the koa kīpuka at 6250 ft. elevation (578, 579). On 28 April, Baldwin (NPS report, field journal) reported seeing 4 'I'iwi in the Park above the horse corral, and on 4 July sighting 2 in the kīpuka near the old 5500 ft. elevation campsite, and an unspecified number in Kīpukakī, near the giant koa and along the Truck Trail (650-652). On 17 November Baldwin (NPS report) logged a "flock of 12 seen" in a 5-acre blooming mamane grove at 6400 ft. elevation along the Mauna Loa Truck Trail, and the following day only 1 seen in the same area (580, 581). On the 17 December 1939 Christmas Count, Donaghho et al (1940a) reported that 15 'I'iwi were seen by a party of four observers for 8 miles, and in two parties for 2 miles from kīpukapuaulu through the adjacent golf course to KMC, and through Kīlauea Iki Crater but excluding the area between KMC and Kīlauea Iki (653).

In May 1940 Donaghho (1940b) termed 'I'iwi "common" in kīpukas at 5500 ft. elevation (654). Baldwin (1941) noted that this species occurred "in fair numbers" in the Nāpau Crater area, Thurston Lava Tube, Bird Park, Kīpukakī, and the edge of the forest of Kīpukakulali, terming the 'I'iwi "common...doing well...though diminished in numbers in the Park" (553). Hatch et al (1941) reported that six observers in two parties sighted 5 'I'iwi in the Kīpukapuaulu and Kīlauea Iki areas on the 22 December 1940 Christmas Count (655).

There seem to be only four reports of 'I'iwi in the Park in 1941, all made by P. H. Baldwin. Baldwin (field journal) stated that he "heard notes at various places that could hardly have been anything else", but none were seen on a hike northeast of Nāpau Crater on 16 July (734). He further recorded that he failed to detect this species during a hike from Kīpukakulali at 6250 ft. elevation to the west boundary of the 1881 lava flow on 21 July (600), "found" an unspecified

number at 7500 ft. elevation in the tongue of 'Ohi'a forest in the kipuka just to the east of the Park boundary on 6 August (582), and stated in a NPS report that this species was "abundant" in the back area of Bird Park (656).

In May 1942 Baldwin (1944) recorded a "congregation of hundreds" of 'I'iwi in Kipukakī, an "irruption" - the air being "a'twitter" with the sound of "hundreds" (657, 658). Later, possibly in 1943, Baldwin (1944) "counted 4" of this species on three parallel trails in a 5-acre plot of koa trees in an unspecified locality of the Park, probably along the Mauna Loa Strip Road (659).

'I'iwi seem to have gone unreported in the Park in 1944, 1945 and 1946. In 1947 Griffey (1947) stated that she conducted an unsuccessful search for 'I'iwi in February at Thurston Lava Tube though they were "supposed" to be rather numerous in that area" (710).

In 1953 P. H. Baldwin completed his report on forest birds studied in the Park during the ten-year period 1940 to 1949. In his study Baldwin (1953) determined from an extensive series of repetitive counts that, in 100 days of censusing, 'I'iwi could be expected to be recorded 0 days in Plots 1, 2 and 3 ranging from 2300 to 3000 ft. elevation, 83 days in Plot 4 (Nāpau Lava Trees) at 2850 ft. elevation, 92 days in Plot 6 (Kīpukakulālio) at 5500 ft. elevation, 75 days in Plot 7 (Kīpukapuāulu) at 4050 ft. elevation, 43 days in Plot 8 (Twin Craters-Thurston Lava Tube) at 3650 ft. elevation, 0 days in Plot 10 (Mauna Loa) at 7500 ft. elevation, 66 days in Plot 12 (Kīpukakulālio) at 5900 ft. elevation, and 0 days in Plot 13 ('Āinahou Gate) at 3050 ft. elevation, Plot 17 (Kalanaokuaiki Pali) at 3300 ft. elevation, and Plot 18 (Luamanu) at 3650 ft. elevation (554, 726). During his studies Baldwin (1953) found that the 'I'iwi population at Plot 4 (Nāpau Lava Trees) tended to remain "at a relatively constant and low level throughout the year" (735), and that this species at Plot 8 (Twin Craters-Thurston Lava Tube) was "totally absent...from January to July with one exceptional occurrence in March 1941", but with a rise in numbers in late summer and autumn repeated each year without exception (711). In Plot 6 (Kīpukakulālio) at 5500 ft. elevation, Baldwin (1953) found "a substantial population from November through July and a much diminished number from August to October - the reverse of the situation at Plot 8 - the pattern repeated each of the six years, the lowest abundance always occurring in August or September when they were absent or present between .10 and .3 birds per acre" (599). In Plot 7 (Kīpukapuāulu) at 4050 ft. elevation, Baldwin (1953) found "a small year-round, but not necessarily resident population...in mid-summer there is a brief rise...(when) the numbers present soar and remain high for 2 or 3 months...by September the numbers are down again...pattern is repeated each year with great regularity (662, 663). In Plot 12 (Kīpukakulālio) at 5900 ft. elevation

Baldwin (1953) found occurrence sporadic at times with a "summer decrease in population...(and) failure to develop any regular and sustained rise during the rest of the year" (583, 584). Overall, Baldwin (1953) concluded that there were "mass shifts" in population and that "seasonal changes in the census values frequently correspond with movements within the populations" which range in the census plots scattered over 20 miles along the flank of Mauna Loa from 2300 to 7500 ft. elevation (555).

'I'iwi in the Park in 1950 were recorded solely by Richards (field journal) who noted on 19 August that he saw none along the trail from Makaopuhi Crater to Nāpau Crater and Lava Trees and return (746), and on 14 October saw 6 (5 together) on a hike from Kīpukakulālio to Bird Park (664).

'I'iwi seem not to have been recorded in the Park in 1951, but in 1952 Rockafellow (1952) noted "12 counted in one hour's time" in the vicinity of the Park residential area on 13 September, found this species "too numerous to count" along Byron's Cliff trail on 16 September, counted 22 along Kīlauea Iki trail on 17 September, and counted 17 on a bus tour conducted in the vicinity of Kīlauea Crater on 24 September (567, 665, 666, 712).

There appears to be a gap in 'I'iwi records in the Park in 1953, but on 1 January 1954 Anonymous (1954) reported that six observers in one to three parties (13 party-hours on foot, 4 1/2 by car) on the Christmas Count censused 50 of this species in Bird Park, along 'Āinahou Road to Ruttle's farm, Thurston Lava Tube trail and portions of Kīlauea Iki trail, Byron Ledge trail and portions of side trails, old CCC camp, Park Headquarters area, and along Wright Road to the end (667).

On 1 January 1955 Christmas Count, Botsford et al. (1955) logged 59 'I'iwi seen by 11 observers in 5 parties (20 party-hours on foot, 3 by car) along Hilina Pali road, Nāpau Crater trail to Pulu Factory, Twin Craters (Thurston Lava Tube), Golf Course, Nobriga (Keauhou) Ranch Road, Bird Park, and Mauna Loa truck trail to 5500 ft. elevation (668). Anonymous (1955) documented numbers of this species recorded during the 1 January 1955 Christmas Count in certain localities as follows: 26 in Kīpukakulālio (5500 ft. elevation) near Truck Trail, 20 in Bird Park, 1 along Hilina Pali road, and 3 along the Nāpau Crater trail to Pulu Factory (598, 669, 727, 737). Anonymous (1956) reported numbers of 'I'iwi censused during the 31 December 1955 Christmas Count in various areas of the Park as follows: 2 in areas along Nāpau Crater trail, Old (?CCC) Summer Camp, Thurston Lava Tube, and Halema'uma'u road; 8 along Mauna Loa road to 5500 ft. elevation and in Kīpukakulālio; and 14 in Bird Park and along trail to KMC (568, 670, 671).

'I'iwi seem not to have been recorded in the Park in 1956 and only once in 1957, Curl (1958) reporting "1 observed" in

Bird Park on 4 May 1957 (672). There is another gap in records of 'I'iwi in the Park for the years 1958 and 1959.

In April 1960 Sayler (1960) recorded the presence of this species around the Volcano House, and Hill (1960) "found a few" at Thurston Lava Tube (673, 713). Hanson (1960a) "observed" an unspecified number of 'I'iwi in Bird Park during Easter vacation, and Mench (1962) stated that there were "fewer" of this species compared with 'Apapane in June (674, 675). Eisenmann (1961) recorded "a few observed in the older humid woods" (?Kīpukapuauolu) of the Park sometime during a visit from 17 to 19 June 1960 (559). An N.P.S. report states that three or more were seen continually around Park Residence No. 4 and more in the Kīlauea Crater area than ever before from September to November 1960 (675, 677). Dunmire (1961) termed this species "common" in the wet ('ohi'a) forest of the Park, especially when the ('ohi'a) trees are in bloom, mentioning Kīpukapuauolu and the vicinity of Thurston lava Tube as being likely places to find them from 1958 to 1960 (556). van Riper (1973) later repeated this assertion almost word for word (557).

Completing a series of surveys in the Park from April 1960 to March 1961, Dunmire (1962) reported numbers of 'I'iwi seen in various localities as follows: 21 seen in 8 surveys totaling 21 1/2 hours along the east rim of Kīlauea Crater, Kīlauea Iki, and upper Chain of Craters Road; 27 seen in 10 surveys totaling 30 1/2 hours from 4000 to 6700 ft. elevation along the Mauna Loa Strip Road; 58 seen in 9 surveys totaling 13 1/4 hours in Kīpukapuauolu and Kīpukakī; and 2 seen in 4 surveys totaling 14 3/4 hours along the trail between Makaopuhi and Nāpau Craters (569, 570, 678, 738).

In February 1962, Curry (1963) reported observing a pair of 'I'iwi "feeding a green young" at about 5600 ft. elevation along the Mauna Loa Strip Road (679), but conducted an unsuccessful search for this species around Thurston Lava Tube (714). An N.P.S. report states that 5 'I'iwi were seen at one time in a mamane tree at Thurston Lava Tube on 1 November 1962 (715).

'I'iwi seem not to have been recorded in the Park in 1963, but on 18 April 1964 King and Bratley (1964) noted the presence of this species as "seen" at the end of the Mauna Loa Strip Road (560, 585).

In the sole record for 1965 a N.P.S. report states that this species was seen at 6500 ft. elevation on the Mauna Loa Strip Road on 5 October where a "number" were sighted at the upslope terminus (586, 587).

In 1966 Berger (1972 report) recorded the presence of 'I'iwi in unspecified numbers on a 22 January trip to Nāpau Crater (739), and Donaghho (1967a) noted "two seen" around a

bend of Mauna Loa Strip Road adjacent to Three Trees Kīpuka on 8 June (588).

In 1967, Hatch (1967) "saw several" in blooming mamane trees along the Mauna Loa Strip Road sometime during the period 21 April to 2 May, and states that G. Morrison (NPS) also saw between 50 and 75 in the same area sometime during this period (680, 681). Donaghho (1968b) recorded the presence of 'I'iwi along the Strip Road on 25 December, while Orenstein (1968) stated that "at least four" were detected on 26 December 1967 (682, 683).

'I'iwi seem to have gone unreported in the Park in 1968, but Yuen (1970) stated that he saw one at Thurston Lava Tube on 8 December, that they were "heard everywhere" on Byron Ledge at Halema'uma'u and Thurston Lava Tube on 10 November, and that "many" were heard during his visit to the Park (561, 571, 716).

In 1970 Banko (field journal) tallied a total of 4 'I'iwi on the 22-23 December Christmas Count, 2 in Kīpukapuāulu, 1 along the trail from Kīpukapuāulu to KMC, and 1 along the trail from Thurston Lava Tube to Byron Ledge and return via Kīlauea Iki rim trail (562, 685, 686, 717).

In 1971 Pratt (1971 ms.) recorded the presence of this species at Thurston Lava Tube in January (718), while Smith and Smith (1971) noted seeing 'I'iwi on the trail down into Kīlauea Crater from the Volcano House during the period 3 to 6 May (687). On the 31 December 1971 and 1 January 1972 Christmas Count, Banko (field journal) censused a total of 3 'I'iwi in the Park - 2 in Kīpukapuāulu and 1 along the trail from Thurston Lava Tube to Byron Ledge and return via the Kīlauea Iki rim trail (563, 688, 719).

In 1972 Jacobi (field journal) recorded hearing one 'I'iwi calling at 7500 ft. elevation along the Mauna Loa trail on 17 October (589). During the 30 December Christmas Count, Gagne (1973) reported that 26 were censused at 4000 and 6600 ft. elevation along the Mauna Loa Strip Road, 6 in Bird Park, and 3 along the Mauna Loa trail at 6600 to 8000 ft. elevation (572, 590, 689). Berger (1972 report) termed this species "fairly common" in the Thurston Lava Tube area during the breeding season (720).

'I'iwi seem to have gone unreported in the Park in 1973 except for the report of the 30 December Christmas Count by Mull (1974) who noted that observers censused none from 6600 to 8200 ft. elevation along the Mauna Loa trail, 9 were tallied along the Strip Road from 4000 to 6000 ft. elevation, 1 was counted in Bird Park, and none were detected along the rim of Kīlauea Crater (591, 690-692).

In 1974 one 'I'iwi specimen was secured (?salvaged) by an undesignated collector in Kīpukakulālio on 22 August (Banko

1979 report) (693). Mull (1975) reported that during the 14 December Christmas Count observers censused 2 'I'iwi along the Mauna Loa trail from 6600 to 8200 ft. elevation, 5 along the Strip Road from 4000 to 6000 ft. elevation, 4 in Bird Park, and none along the rim of Kīlauea Crater (593, 594, 694, 695).

Conant (1975) (1975 report) surveyed forest birds monthly in the Park essentially between March 1972 and July 1973, and between August 1974 to March 1975, computing densities or relative abundance of this species in the various areas as follows: "small numbers" in 7000 to 8000 ft. elevation sub-alpine scrub habitat; 13 birds per 40 ha (98.8 acres), 54 percent occurrence frequency in sub-alpine scrub (Transect 9); none in 8 censuses in treeline ecosystem (Transect 12); 15 birds per 40 ha (69 percent occurrence frequency) in Kīpukakī (Transect 4); 40 birds per 40 ha, (77 percent occurrence frequency) in Kīpukapuāulu (Transect 16); none in 7 censuses in Tree Molds area (Transect 3); 28 birds per 40 ha, (92 percent occurrence frequency) in lower mountain parkland (Transect 5); 16 birds per 40 ha, (31 percent occurrence frequency) in Thurston Lava Tube area (Transect 1); and none at Kīpukakeanābihopa (592, 595, 596, 697-700, 721, 728). Conant (1978 ms.) also observed none during the 1976 to 1977 systematic surveys in the Kalapana Extension, stating that she felt "that they occur but were not observed due to very low numbers" (740). In 1975 Katahira (1975) noted 2 'I'iwi seen along the Strip Road at 5500 ft. elevation on 13 September (696).

In 1978 Katahira (1978) reported tha 'I'iwi were censused on the 2 January 1978 Christmas Count in the following numbers in various localities: 2 along Mauna Loa trail from 6600 to 8000 ft. elevation; none along Strip Road from 4000 to 6600 ft. elevation; 1 in Kīpukapuāulu and adjacent areas; and 2 along the rim of Kīlauea Crater (597, 701-703).

Kīlauea District, 1904 to 1978

'I'iwi seem not to have been recorded in Kīlauea District for a period of 35 years, from 1902 when H. W. Henshaw made his last collection, until 13 July 1937 when Donaghho (1951b) noted "a few" along the first few miles of the trail from Volcano to Kūlani Cone (752). In 1938 Baldwin (field journal) saw and heard one of this species near the 3-mile marker on the same trail on 24 November, and on 29 December saw one or two near the Volcano-Kūlani cone trailhead (753, 754). On 8 February 1939, Baldwin (field journal) recorded one 'I'iwi seen and heard along the same route (755).

There seem to be no field records of 'I'iwi in Kīlauea District for the period 1940 to 1944, but a N.P.S. report states, probably as a result of Baldwin's observation, that this species was seen at 3700 ft. elevation on a hike to an

unmapped cinder cone below Kūlani Cone in the vicinity of Mountain View flume road in April 1945 (772). There appears to be a gap in 'I'iwi observations in Kīlauea District from 1946 to 1948. Baldwin collected one specimen at 2800 ft. elevation in the land of Kahaua Le'a sometime during 1948 and/or 1949 (Banko 1979 report) (756), and on 12 September 1949 Baldwin (field journal) stated that this species was "found lower (on the Mountain View flume road) than...before, but still pretty far up" (773).

L. P. Richards recorded presence and/or population status of 'I'iwi in Kīlauea District in late 1950 and early 1951. Richards (field journal) logged "good observation...on two" somewhere along the Stainback Highway from 9000 ft. elevation (hut) to the intersection of the Flume Road on 19 August 1950 (741). On 20 September 1950 he "saw two" at 2400 ft. elevation by altimeter on a hike about 4 3/4 miles SSW along the Charles Tong trail and return, beginning about 1/2 mile from the Belt Highway near the end of the 'Ōla'a Forest Park Preserve, 2500 ft. elevation, and 24 miles from Hilo (757). On 12 October 1950 Baldwin (field journal) noted "many heard...25-50?" in a 1130 to 1830 hours 2 1/2-mile hike along the Volcano-Kūlani Cone trail at 3400 to 3700 ft. elevation (758). Along this same trail at elevations between 3800 to 4200 ft., he recorded presence but not relative abundance of 'I'iwi on 13 and 15 October and 1 November 1950, and on 14 and 17 January 1951 (759-763).

'I'iwi seem to have gone unnoted in Kīlauea District from 1952 through 1954. On 31 December 1955, Anonymous (1956 a,b) reported that 15 of this species were censused in 1/2 hour by foot and 1/2 hour by car along Wright Road in the Christmas Count (764), and that during the summer of 1956 the 'I'iwi seemed "to have increased over the winter population" with adults and immatures seen about a residence and at the end of Wright Road (764, 765). These reports are followed by a 2-year gap in 'I'iwi records in Kīlauea District from 1957 through 1958.

Dunmire (1962) reported that 67 of this species was seen in 16 3/4 hours during six visits to the N.P.S. 'Ōla'a Tract in October and November 1959; May, June and July 1960; and April 1961 (747). Additionally, Dunmire (1960) recorded "many seen" in the 'Ōla'a Tract on 17 June 1960 (742).

'I'iwi apparently went unreported in Kīlauea District for nearly a decade after Dunmire logged his last sightings of this species in 1961. In 1970 Banko (field journal) logged the recollection of H. Shipman, resident of Hilo area since 1892, that he (Shipman) never saw 'I'iwi as far down from upper forests as Kea'au (783). On 27 February 1971 van Riper (field journal) observed one of this species during a 1630 to 1730 hours hike along Wright Road (766). Gagne (1973) reported that 4 'I'iwi were censused during the 30 December

1972 Christmas Count along Wright Road and Upper 'Ōla'a Forest Reserve, and 90 somewhere along Stainback Highway and/or side roads between Kūlani Cone and Pu'u Maka'ala (744, 767). On 19 October 1973 M. Mull (1974) stated that she had heard this species daily and seen it several times in the yard of her Volcano residence (768), and reported that 2 were censused in the 30 December 1973 Christmas Count in the Volcano-Upper 'Ōla'a Forest Reserve-Wright Road area (769), and 91 along the Stainback Highway and/or side roads between Kūlani Cone and Pu'u Maka'ala (774). Reporting results of the 14 December 1974 Christmas Count Mull (1975) stated that 1 'I'iwi was censused in the N.P.S. 'Ōla'a Tract, 4 in the Volcano community, and 129 along Stainback Highway and/or side roads between Kūlani Cone and Pu'u Maka'ala (745, 770, 775). Jacobi and Warshauer (1975 report) spent 23 days on a bioecological survey of the 'Ōla'a Tract from January 1974 to January 1975, reporting that this species was "not recorded" in open Metrosideros forest in the Small Tract Section, Cibotium forest beyond the end of the 'Ōla'a Back Road, or in A. koa forest in the Large Tract Section (748). They termed the 'I'iwi "rare (only sighted once or twice during the entire survey)" in Cibotium forest along the trail to the koa forest; and, "occasional (at least 5 birds consistently found over the total survey time in a particular forest type, however often in numbers of less than 5 per day)" in closed Metrosideros forest in from the Volcano Agricultural Experiment Station, and in open Metrosideros forest beyond the end of Wright Road (750).

'I'iwi went unrecorded in Kīlauea District in 1976 but Katahira (1978) reported results of the 1977 Christmas Count on 2 January 1978 as follows: 98 censused in the N.P.S. 'Ōla'a Tract, 4 in Volcano Community, and 113 along Stainback Highway and in the Pu'u Maka'ala area (746, 771, 776).

Mauna Kea District, 1904 to 1978

'I'iwi went unrecorded in Mauna Kea District for more than 30 years after C. E. Blacow collected specimens on Horner's Ranch ('Umikoa) in 1903. In the spring of 1937 Donaghho (1937 report) stated that E. Y. Hosaka reported an "invasion" of the species on the east slope of Mauna Kea above Kūka'iau Ranch ('Umikoa) (836). Donaghho (1951g) noted a "pair seen" in the mamane forest up from Pu'uloa in the Mauna Kea Forest Reserve on 14 September 1937 (827). There is a 2-year gap of 'I'iwi records in Mauna Kea District in 1938 and 1939, but in May 1940 Donaghho (1940b) recorded the presence of this species somewhere in the 'ohi'a forest of Mauna Kea below 5000 ft. elevation (787).

P. H. Baldwin recorded 'I'iwi on several field trips to the Mauna Kea area in 1941, 1942 and 1943. On 11 September 1941 Baldwin (field journal) logged "one seen" near Kapehu Stream from 2000 to 2350 ft. elevation in the Forest Reserve

above Hilo, heard this species "about a dozen times" in 40 minutes just south of Kapehu Stream, but found "none present" west of Kapehu Stream at 2350 ft. elevation (797-799). On 13 November 1942 Baldwin (field journal) noted this species as "possibly heard" at ca. 4000 ft. elevation along the Saddle Road 8 miles above Ka'ūmana flume, termed it the "third most abundant species" (after 'apapane, 'amakihi) saw it once on about a 3-4 mile hike through 'ohi'a and koa kipukas on Pu'u 'Ō'ō Ranch from 5400 to 6000 ft. elevation, and again after a 2-mile hike south of the Saddle Road at 5700 ft. elevation, and found "several" in small kipukas along the Saddle Road nearly 10 miles above Ka'ūmana flume (800, 808-810). On 21 November 1942 Baldwin (field journal) stated that it was his impression that 'I'iwi were more numerous in the land of Humu'ula on Pu'u 'Ō'ō Ranch than in Hawaii (Volcanoes) National Park (811). Sometime during the 1948-1949 period, Baldwin collected one specimen at 4500 ft. elevation in Humu'ula, two examples at 5924 ft. elevation in Humu'ula along the Pu'u 'Ō'ō - Volcano trail, and three specimens at 5773 to 5900 ft. elevation in Waiākea along the Pu'u 'Ō'ō - Volcano trail (812-814) (Banko 1979 report). On 17, 19 and 20 April 1943 Baldwin (field journal) found "none" of this species: at Pu'ukole and the green kipukas above on the north flank of Mauna Loa; on a hike about 4 or 5 miles northwest of Pu'u La'au; or in the Pu'u La'au forest northwest of the Forestry cabin in the Mauna Kea Forest Reserve (821-823). A 6-year gap in records in Mauna Kea District occurs from 1944 to 1949.

L. P. Richards noted the population status of 'I'iwi on Mauna Kea during the summer and fall of 1950. On 15 August Richards (field journal) "saw possibly six, and heard perhaps eight...two collected" on a hike 250 yards down Pu'u 'Ō'ō trail toward Mauna Loa from where it crosses the Saddle Road (815), and on 18 August termed this species "common...six or eight seen" on a 3-mile hike along Pu'u 'Ō'ō trail from the junction of the 1942 lava flow (816). On 7 October Richards (field journal) termed 'I'iwi "plentiful...estimate 70-80 seen, one family observed...4-5 juveniles seen" at 7100 to 7350 ft. elevation west of Pu'u La'au (824). On 18 September he recorded "about 12...were seen and possibly heard" on 1/4 mile hike through a kipuka on Pu'u 'Ō'ō Ranch, 20 miles from Hilo (817). Richards (field journal) also recorded the presence of this species 2 miles along the Pu'u 'Ō'ō trail south from the Saddle Road on 27 October, and 1 1/4 miles on 28 October 1950 (818).

'I'iwi were not recorded in Mauna Kea District from 1951 through 1957. H. Baldwin (1956) termed this species "occasionally present" on an unspecified date at Pu'u Ahumoa (825). Eastman and Eastman (1958) logged "substantial numbers" of 'I'iwi between 4000 and 6000 ft. elevation on the Saddle Road sometime between 23 March and 14 April 1958 (802).

There seem to be only seven scattered reports on 'I'iwi observations in Mauna Kea District during the 1960's.

Anonymous (1960) states that this species was seen along the Saddle Road on 27 March 1960 (748). 'I'iwi were apparently not reported in this District in 1961, but around July 1962 (Walker 1962) reported them "numerous" in the trees above Kanakaleonui (828). Only one record appears of 'I'iwi in Mauna Kea District from 1963 to 1965 - the negative report of Ward (field journal) who noted "none seen" on a brief visit to Pu'u Lā'au on 17 April 1964 (826). On 30 May 1966 Donaghho (1966b) reported that this species was "all over (with) great numbers" being seen in the Koa forest about 200 yards beyond Hopuwai outcamp of the Humu'ula Sheep Station (829). Ord (1967) noted "don't think I have seen so many" along the Saddle Road sometime from 16 to 23 November 1966 (785). 'I'iwi were not recorded in Mauna Kea District in 1967 or 1969, but on 24 January 1968 Walker (1968) logged "2 seen" just above Pu'u Mali from 8000 to 9000 ft. elevation on a hike from Halepōhaku to Pu'u Lā'au (788). Berger (1972) reported that he watched an 'I'iwi at 4000 ft. elevation along the Saddle Road on 29 January 1968 (803).

There seem to be only six observations and/or statements on relative abundance of 'I'iwi in Mauna Kea District from 1970 to 1978. Van Riper (field journal) logged "5 observed" on a 1000 to 1400 hours survey at Pōhakuloa and Saddle Road area on 19 January 1971, recorded "32 observed" on a survey along the upper Wailuku River from 1300 to 1515 hours on 6 February 1971, and on 28 February noted "3 observed" in the rain forest at 4000 ft. elevation along the Saddle Road from 1630 to 1700 hours (798, 804, 805). On 27 June 1971 van Riper (1973) reported that "in over 4 years of work" in the dry Māmane-Naio forest on Mauna Kea he had seen only two 'I'iwi, and these appeared to be "merely passing through" (790), but that around Nauhi on the eastern slope, this species occurred "in such great numbers...where banana poka is abundant...that it was hard to distinguish the presence of any other species of bird" (786). 'I'iwi apparently went unrecorded on Mauna Kea from 1972 through 1975.

Shallenberger (1977) conducted a bird and mammal survey of Army lands in the Pōhakuloa Training Area from late November 1966 to January 1977, found none of this species, and termed its "absence from recorded species list surprising... State wildlife biologists confirm presence, particularly when mamane trees are in bloom...have seen 'I'iwi at several locations in areas surrounding P.T.A., in both mamane and ohia forest...extended drought and poor flowering probably responsible for absence during this survey...doubtful that any were missed on transects" (791).

CHRONOLOGICAL DISTRIBUTION OF RECORDS

The pattern shown in Table 1. below reflects the comparative lack of ornithological activity during the first century after discovery, increase of interest from the late

1880's to early 1900's, lack of field observers from about 1903 to 1936, and the upswing in observational recording during the 1937 to 1978 period.

Table 4.

Chronological Distribution of 'I'iwi Records By Decade,
1779 to 1978.

1770's - 3	1840's - 1	1910's - 4
1780's - 0	1850's - 0	1920's - 17
1790's - 1	1860's - 0	1930's - 128
1800's - 0	1870's - 4	1940's - 126
1810's - 0	1880's - 20	1950's - 81
1820's - 1	1890's - 58	1960's - 146
1830's - 3	1900's - 37	1970's - 205

GEOGRAPHICAL DISTRIBUTION OF RECORDS

Of a total of some 838 serially numbered records, some 679 (81%) are referrable to single quadrangles on the various islands, as follows: Kaua'i 64 (9%), O'ahu 125 (18%), Moloka'i 14 (2%), Lāna'i 13 (2%), Maui 64 (9%), and Hawai'i 398 (59%). Geographical distribution of records by quadrangle is exhibited in Figures 1 and 2.

COMPLETENESS OF DATA, BIAS, ERRONEOUS AND DOUBTFUL RECORDS

The potential daily range of this species, up to several miles during the summer season, severely limits comparability of data.

The obvious bias in chronological distribution of records by decade is due primarily to a lack of specimen collectors and/or field observers in the Islands from 1770's through 1870's, and again from 1910's through the 1920's.

Geographical distribution of records is skewed numerically upward in and near Hawaii Volcanoes National Park on Hawai'i, and Haleakalā National Park on Maui because of visitor interest in birds and biological studies sponsored by the National Park Service.

Figure 1.

Distribution of 281 Observations, Reports and Museum Records of Vestiarina coccinea, per quadrangle, on Major Hawaiian Islands, except Hawai'i, from 1778 to 1978.

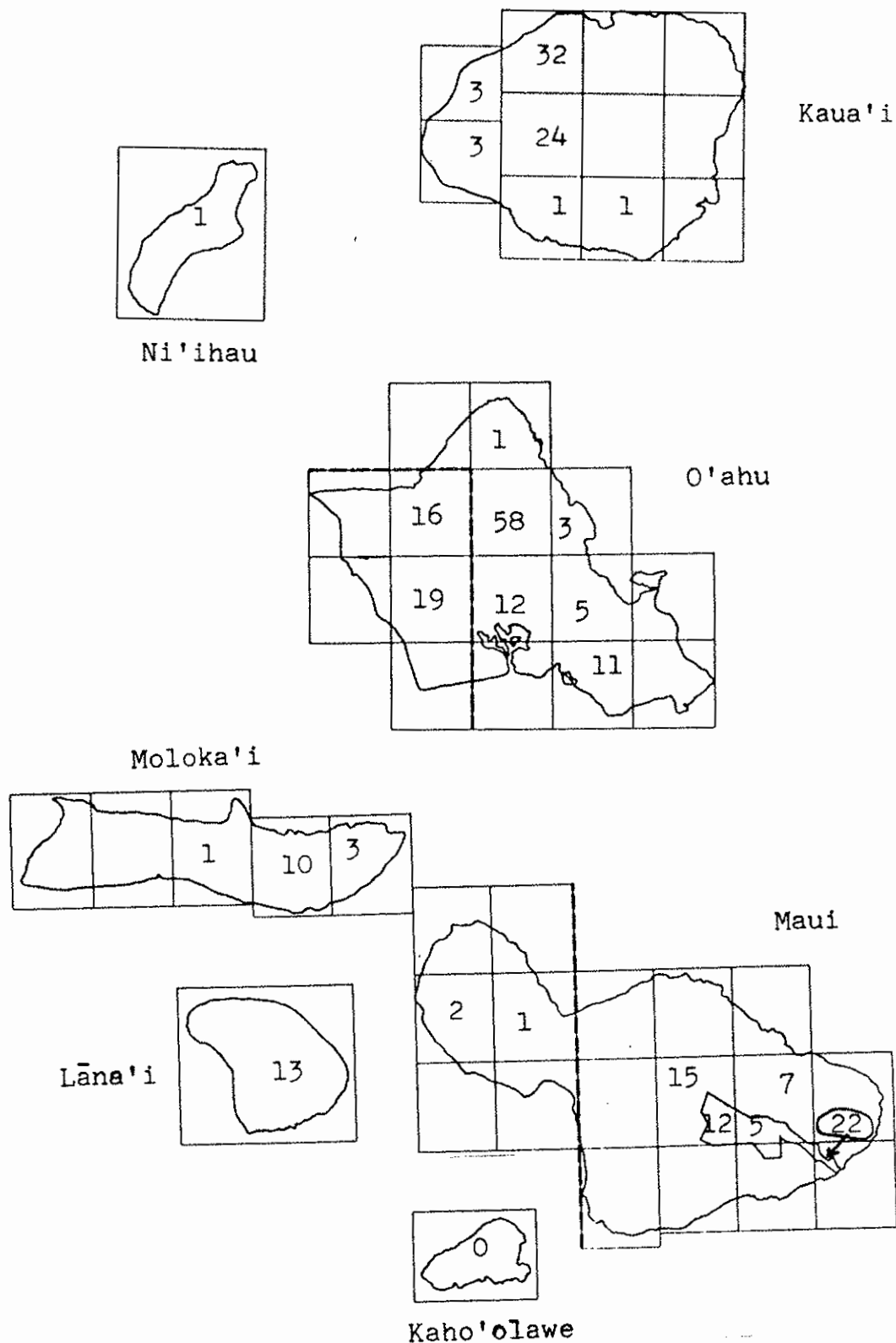
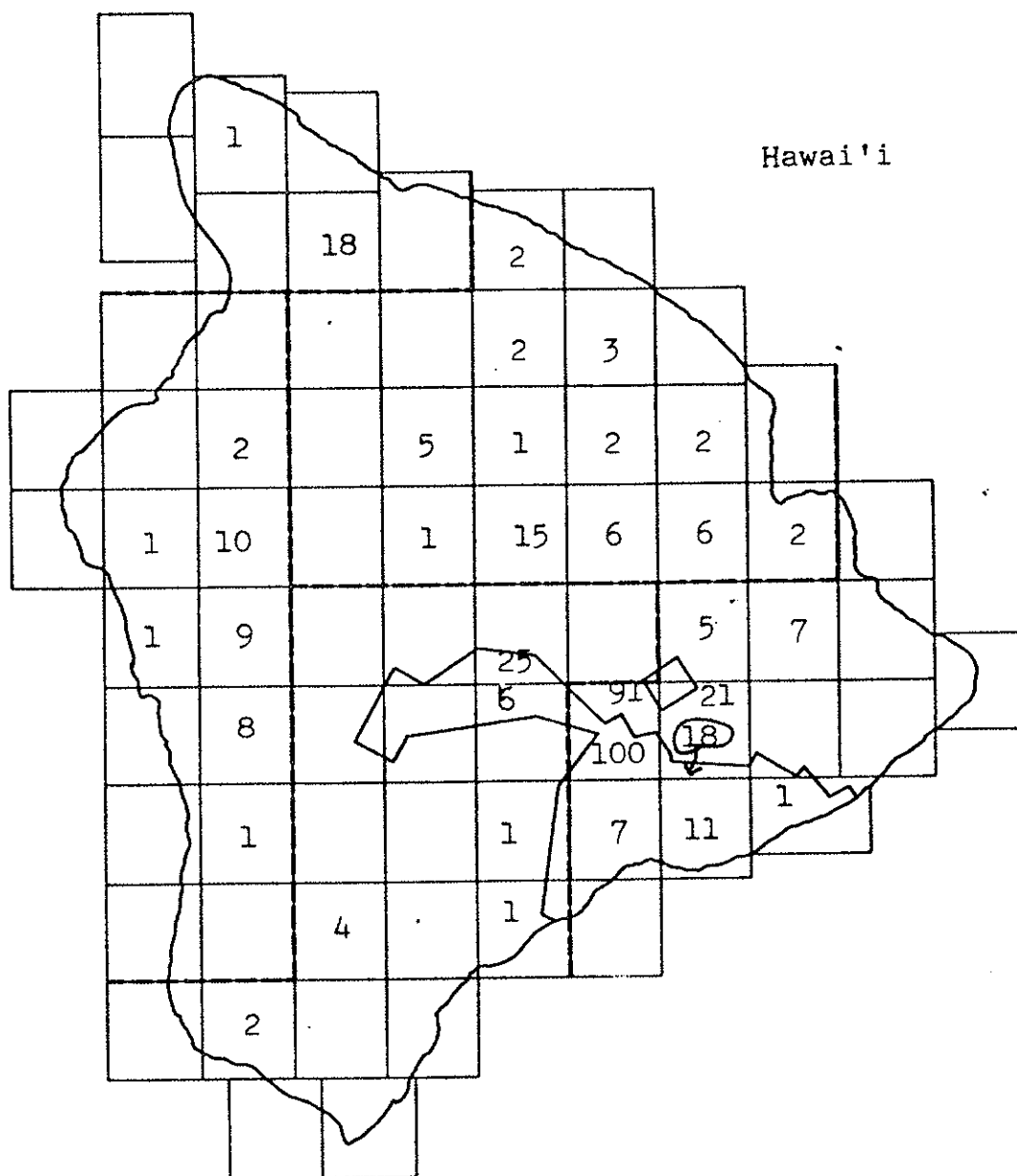


Figure 2.

Distribution of 398 Observations, Reports and Museum Records of Vestiarina coccinea, per quadrangle, on the Island of Hawai'i from 1779 to 1978.



Records shown for all island are relatively exhaustive except for census data gathered by the U. S. Fish and Wildlife Service on Kaua'i beginning about 1967, and on Hawai'i from 1967 to 1979, which was not available at the time this report was written. Also missing, except when needed to fill obvious gaps, are data I gathered on the island of Hawai'i in the late 1960's and early 1970's. The areas I sampled during this period were, for the most part, covered more thoroughly a short time later by others.

SUMMARY AND CONCLUSIONS

The 'I'iwi is a small, brilliant-scarlet forest bird with vermilion-red legs, black wings and tail, and long curved orange bill. It formerly ranged over all six forested islands. Some 505 specimens are known to have been collected over a broad geographical and altitudinal range during the 1778 to 1978 period.

Ornithologists of the late 1800's termed this species the most noticeable and one of the most common and abundant forest birds in the Islands, ranging from low to high elevations and, when driven by wind, frequently observed even on the island of Ni'ihau and sea coasts of forested islands. On O'ahu populations in the late 1800's appear to have been relatively less abundant and widespread than those reported on the other islands.

Negative findings and last reports trace the more or less continual depopulation of this species after about 1900. The last reference to widespread relative abundance on all Islands occurred in 1915. 'I'iwi have not been reported on Lāna'i since 1928. Recent surveyors on O'ahu and Moloka'i characterized this species as rare. Paucity of reports from low and mid-elevation forests on Kaua'i, Maui and Hawai'i indicate almost universal disappearance of 'I'iwi up to about 3000 ft., and moderate to severe depopulation to 4000 ft. elevation upwards indicate significant depopulation has occurred in Kona District and Hawai'i Volcanoes National Park.

It is concluded that 'I'iwi are extinct on Lāna'i and almost completely depopulated on O'ahu and Moloka'i. On Kaua'i, Maui and Hawai'i populations have largely, if not completely, disappeared below about 3500 ft. and moderately to severely depopulated in most localities at higher elevations. In only a few comparatively small localities in the Islands do favorable reports indicate that remaining populations could be termed abundant and then, perhaps, only seasonally.

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APPENDIX

1. Observations, reports and specimen records are organized by island group, island, district and/or quadrangle map. Order of listing, names and locations of district and quadrangle boundaries are explained and illustrated in CPSU/UH Report No. 4, Introduction To Part I, Historical Synthesis of Recent Endemic Hawaiian Birds.

2. Acronyms, composed of the first three letters of the author's (or senior author's) last name, the initial letter of the first name, and last two digits of the year of publication represent sources found in the bibliography under References Cited. For example, BRYW01 = Bryan, Wm. A. and Alvin Seale 1901. Notes on the birds of Kauai. Bishop Museum Occ. Papers 1(3):129-137. In cases where it is necessary to distinguish between two or more articles published by an author in any given year, letters are added to the acronym in alphabetical sequence, e.g. BRYW01a - Bryan, W. A. 1901. A key to the birds of the Hawaiian group. Bishop Museum Press. 76 pp.

Parenthetical numbers such as (5), represent references listed under Unpublished Sources Cited in the bibliography.

3. Place-names are cited in original form.

4. Parenthetical information is qualified.

Vestiaria coccinea - Southeastern Hawaiian Islands

	Relative Abundance/Locality	El. (ft.)	Date	Source
1	Peale: one of the most common species / inhabiting most of the group of Hawaiian Islands		(1840)	CASJ58
2	(listed) / whole group		(1879)	DOLS79
3	perhaps the most noticeable forest bird / in the Islands		(1887-1888)	WILS90a
4	(present) / generally distributed over the various Hawaiian Islands...inhabit all wooded regions from the lower hills up to 8,000 feet or more		(1900)	ROTW00
5	abundant in the forests / (all the islands)		(1894-1897)	PERR13
6	(present) / in the forest on all the larger inhabited islands in favorable localities from near the sea-shore to the upper limits of the large forest trees		(1915)	BRYW15
7	most abundant / from two to four thousand feet elevation (forested islands)		(1915)	BRYW15
8	originally extremely numerous...now greatly reduced / (Hawaiian Islands)		(1944)	MUNG44
ISLANDWIDE				
9	one of the most abundant...of all the Drepanid birds / found throughout the woods		(1894-1896)	PERR03

Vestiaria coccinea - Southeastern Hawaiian Islands

- | | | | |
|----|--|----------------|--------|
| 10 | estimated seeing at least 134...average of about 5 were seen per mile of trail, and about this number were heard but not seen / (Ohia and Koa forests generally above 2,750 ft.) | (Jun-Aug 1960) | RICF64 |
| 11 | moderately common resident / Ohia or Koa forests, generally above 2,750 ft.) | (Jun-Aug 1960) | RICF64 |
| 12 | crudely estimate at least 18,500 (on Kauai) / judging...perhaps 75 square miles of suitable habitat exists | (Jun-Aug 1960) | RICF64 |
| 13 | still fairly common / (islandwide) | (1970) | BERA70 |
| 14 | HDFG: occurs as a breeding population / (islandwide) | (1969) | (2) |
| 15 | still fairly common / on Kauai...where, in general, the birds are found at elevations above 2,800 feet | (1972) | BERA72 |
| 16 | remains moderately abundant / in local native forests | (1972) | MULM72 |
| 17 | now fairly common; reduced since 1891 / (islandwide) | (1977) | ATKI77 |

UNSPECIFIED LOCALITY

- | | | | |
|----|--|----------------------------|---------|
| 18 | frequently observed / on the sea-beach...(where) it is driven by the high winds from its forest home | (1887-1888) | WILS90b |
| 19 | Banko: Wilson collected 1 specimen / undesignated | Sep 1888 | (1) |
| 20 | Banko: Palmer collected 1 specimen / undesignated locality | 22 Jan 1891 | (1) |
| 21 | Banko: Perkins collected 1 specimen / undesignated locality | 4000
ft.el.
May 1894 | (1) |

Vestiaria coccinea - Southeastern Hawaiian Islands

- | | | | |
|----|--|--------------------------|-----------------|
| 22 | Banko: Munro collected 6 specimens / undesignated locality | (1890's?) | (1) |
| 23 | Banko: Bryan and Seale collected 7 specimens / undesignated localities | Apr 1900 | (1) |
| 24 | Banko: Kusche collected 5 specimens / unspecified localities | 4300
& 4500
ft.el. | Apr 1920
(1) |

Vestiaria coccinea - Kaua'i

25	Banko: Kutsche collected 1 specimen / Kiaku Cave	Apr 1920	(1)
26	3 seen...2 others heard / Alakai Swamp	19-22 Mar 1964	SCHP65
27	1 seen / Alakai Swamp	3 Jan 1968	ORER68
28	observed / trip into Alakai Swamp	17 Feb (1968)	ANON68

MULTIQUADRANGLE

29	seen / along trail to Alakai Swamp	(6-7 Sep 1946)	PEAG47
30	frequently seen / along trail from end of Camp 10 road to Alakai Swamp	3 Mar 1961	KINB61
31	one of commoner species / along trail from Alakai Swamp to end Camp 10 road	4 Mar 1961	KINB61
32	seen and heard quite frequently /along the trail to Alakai Swamp to end Camp 10 road	2 Sep 1961	BOWJ62
33	large numbers seen and heard / along trail to Koaie	20 Apr 1962	ORDW62
34	abundant / Alakai Swamp	1-2 Sep 1963	ORDW63
35	Ward: numerous...15 seen and heard / along trail (from end Camp 10 road) to Koaie cabin	20 Feb 1964	(5)
36	Ward: 25 recorded / on 3-hour hike from Koaie cabin to foad-end trailhead	22 Feb 1964	(5)

Vestiaria coccinea - Kaua'i

- | | | | |
|----|--|----------------|--------|
| 37 | Ward: several / on hike to Koaie cabin and beyond, and return | 2 May 1965 | (5) |
| 38 | Banko: common / on hike along Mohihi trail to USGS cabin on Koaie stream | 30 Nov 1965 | (4) |
| 39 | Banko: common / hike from Koaie stream cabin to Mohihi trailhead | 2 Dec 1965 | (4) |
| 40 | seen...very common / Alakai Swamp area | 28-30 May 1966 | ANON66 |
| 41 | 5 censused (Christmas Count), 0730 to 1700 hours / main belt road from Wailua to Kokee, including both Kalalau lookouts, Makaha Ridge Road | 29 Dec 1970 | SEAW71 |
| 42 | van Riper: 20 seen, 0930-1800 hours walking survey / Alakai Swamp (trail) | 29 Apr 1971 | (12) |
| 43 | present / mile and a half along Alakai Swamp trail | (2 Jun 1971) | STRC71 |
| 44 | censused 110 / Waimea area, center E of junction of Kokee Road from Waimea and Kekaha | 28 Dec 1974 | SEAW75 |

MAKAHA POINT

- | | | | |
|----|---|----------|--------|
| 45 | Banko: Palmer collected 1 specimen / Halemanu | Apr 1893 | (1) |
| 46 | Banko: Bryan and Seale collected 2 specimens / Halemanu | Apr 1900 | (1) |
| 47 | Munro: saw a solitary Iiwi...in parts of 3 days / forests of Halemanu on the northwest of Kauai, penetrating as far as Waiakaoli stream and the pali overlooking the Kalalau Valley | (1928) | GREH29 |

Vestiaria coccinea - Kaua'i

HAEANA

48	seen / Kokee area	(5 Sep 1964)	PEAG46b
49	seen / near cabin, Kokee	(6-7 Sep 1946)	PEAG47
50	one seen, only native bird / around Kokee	25-27 Sep 1928	MUNG47
51	many reported seen recently / at Kokee	May or Jun (1947)	MUNG47
52	present / Kumuweia Ridge area	(1947)	WOOD47
53	found / near Kalalau Lookout	(23 Mar to 14 Apr 1958)	EASW58
54	pair seen / Kokee area	Jun 1959	HANC59
55	saw many...in the three days / trails...to Pihea, Kilohana Lookout, Awaawapuhi, etc...Kokee area	(28-30 Jun 1960)	RICF60
56	Ward: saw two...from back of truck / on way from Kokee State Park to end (Camp 10) road	20 Feb 1964	(5)
57	reported visiting / just outside...Kokee museum	6 Jun (1966)	DONW67a
58	seen / (vicinity Kalalau Lookout)	16-23 Nov 1966	ORDW67
59	seen / vicinity Kokee State Park (Museum)	16-23 Nov 1966	ORDW67
60	plentiful...one heard / in our garden...Kokee	Mar 1967	HANN67
61	often seen and heard / Kokee trails...Naulolo, Honopu, Awaawapuhi, Alakai, Halemanu, Kumuwela and Highway 50 to Kalalau	Sep 1967	BIRD68

Vestiaria coccinea - Kaua'i

62	seen / Kokee	Sep 1967	WOLJ69
63	one seen / (Kalalau) Lookout	5 Nov (1967)	DONW68a
64	2 seen / Kokee	5 Jan 1968	ORER68
65	one sat in plain view / Kokee Park	(31 Mar 1968)	KEIG68
66	one censused in about one hour in heavy rain...	29 Dec 1969	ANON70
67	Eddinger: 22 nests found / 2 sq. mile study area east of Kalalau Lookout bordered on the west by Kalalau Road and on the north by Puu O Kila Road	1969 (4) 1970 (18)	(19)
68	present / Kokee	(8 Jul to 2 Sep 1970)	PLEJ70
69	van Riper: one observed, 1200-1700 hour walking survey / Kokee	27 Apr 1971	(12)
70	van Riper: 31 seen, 0700-1700 hours walking survey / Mohihi Road, Kokee	28 Apr 1971	(12)
71	van Riper: 5 seen, 0900-1400 hours walking survey / Girl Scout Camp, Kokee, to Halemanu	30 Apr 1971	(12)
72	van Riper: 46 seen, 0700-1645 hours walking survey / Kawai Koi Stream Valley	1 May 1971	(12)
73	constantly within sight or sound / area around where the Piha Trail joins the Alakai Swamp Trail	(15-18 Sep 1971)	MULW71

Vestiaria coccinea - Kaua'i

74	seen...in space of few minutes / in back of cabin...Kokee	(15-18 Sep 1971)	MULW71
75	censused 5 / Honopu trail	29 Dec 1973	HARA74b
76	censused 11 / Mohihi (Camp Sloggett area)	29 Dec 1973	HARA74b
77	fourth most abundant endemic bird seen / West Alakai Swamp	undated 4-day field trip (1974?)	HARA74a
78	one or two enticed with tape recording / Koa forest near Kokee	19 Mar 1977	JOHB77
79	21 censused (Christmas Count) / Kokee State Park... low counts due to fog, rain	18 Dec 1977	BOYD78

WAIMEA CANYON

17

80	so numerous...their wings keep up a continual buzz-- half a dozen in a tree at a time / at Kaholuamanu	Feb, Mar 1891	MUNG44
81	Banko: Palmer collected one specimen / Kaholuamanu	Jun 1893	(1)
82	Perkins: in thousands / Kaholuamanu Plateau (F. Gay's mountain house)	15 Apr (1895)	(3)
83	Perkins: common / high plateau above Waimea revisited (F. Gay's mountain house)	Oct 1895	(3)
84	Banko: Brayan and Seale collected 9 specimens / Kaholuamanu	Apr 1900	(1)
85	not rare / area above the Robinson mountain house, Kaholuamanu	(Oct 1941)	DONW41

Vestiaria coccinea - Kaua'i

86	(observed in afternoon's birding) / vicinity Koaie cabin, Alakai Swamp	2 Sep 1961	BOWJ62
87	seen / ridge south of Koaie cabin	21 Apr 1962	ORDW62
88	heard many singing...0600 hours / vicinity Koaie cabin	21 Apr 1962	ORDW62
89	Ward: 25 plus recorded...stopped every 100 yards or so to listen and watch / along trail from Koaie cabin toward Waialeale about 2 or 3 miles...side trip into deep valley on other side of plateau...and return	21 Feb 1964	(5)
90	with apapane most common bird / along ridge deeper and deeper into the swamp (past Koaie cabin)	21-23 Feb 1964	WALR64
91	heard calling in increasing numbers / as we went further into the forest from end of road toward (Koaie cabin), Alakai Swamp	21-23 Feb 1964	WALR64
92	numerous / along trail from (Koaie cabin) up and over the ridge into 'Ooaa' valley	21-23 Feb 1964	WALR64
93	seen nesting / (vicinity Koaie cabin)	(23) Sep 1964	WALR64
94	two counted / Mohihi River - Koaie cabin	11 Aug 1965	DONW65b
95	ten counted / Koaie - Waialae Trail	12 Aug 1965	DONW65b
96	four counted / Wainiha Rim	13 Aug 1965	DONW65b
97	three counted / Koaie - Waialae Trail	14 Aug 1965	DONW65b
98	five counted / Koaie Cabin - Mohihi River	15 Aug 1965	DONW65b

Vestiaria coccinea - Kaua'i

- | | | | |
|-----|--|--------------------|---------|
| 99 | Banko: scarce / first mile or so of trail between Koaie Stream cabin and Waialae cabin | 1 Dec 1965 | (4) |
| 100 | USFWS: 3 banded / Alakai Swamp, Koaie Ridge (near cabin) | 14 May 1966 | (20) |
| 101 | about 30 seen / on a trip into the Alakai...got back two miles from the Koaie gulch | 28 Aug 1967 | DONW67c |
| 102 | appoximately 20 seen and heard in one traverse of the ridge...clear skies...wind moderate...mild temperatures / along the ridge trail extending SSE from the (Koaie) cabin paralleling Koaie stream...approsimately 1½ miles to source...making short side trips out spur ridges and descending into the canyon at the stream origin...Alakai Swamp | 31 May, 1 Jun 1968 | GAUJ68 |
| 103 | censused 33 / East Alakai Swamp | 29 Dec 1973 | HARA74b |
| 73 | KEKAHA | | |
| 104 | Cook: great numbers of skins of small red birds (<u>Vestiaria coccinea</u>) which were often tied up in bunches of 20 or more...brought to barter / vicinity of Waimea | 20-22 Jan 1778 | STRE50 |
| 105 | great numbers of skins of small red birds (offered) for sale which were often tied up in bunches of twenty or more, or had a small wooden skewer run through their nostrils...about the size of a sparrow...of a beautiful scarlet colour, with black tail and wings; and an arched bill, twice the length of teh head, which with the feet was also of a reddish colour...never met with alive / Atooi (Kaua'i) | Jan 1778 | COOJ84 |

Vestiaria coccinea - Kaua'i

106	saw great numbers of the skins of the Red Bird (? <u>Vestiaria coccinea</u>) brought off for sale / Wymoa (Waimea) Bay, at anchor	14 Mar 1792	BELE29
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HANAPAPA

107	Banko: Gay collected 2 specimens / Makaweli	26 Dec 1892	(1)
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KOLOA

108	Perkins: present / at a good elevation...in the mountains some miles west from Lihue...dense masses of staghorn fern	Jul/Aug 1896	(3)
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Vestiaria coccinea - Ni'ihau

109 F. Sinclair: saw numbers driven by gales from
Kauai / unspecified locality

(1887-1888)

WILS90b

Vestiaria coccinea - O'ahu

ISLANDWIDE INFERENCE

- | | | | |
|-----|--|-------------|--------|
| 110 | one of the most abundant...of all the Drepanid birds;
now less abundant (on Oahu) than on the other islands /
found throughout the woods...still exists even in the
mountains in the immediate vicinity of Honolulu, although
rare...further away from the city it is common enough
in both the mountain ranges | (1892-1897) | PERR03 |
| 111 | rare / (islandwide) | (1967) | HAWA67 |
| 112 | HDFG: occurs as a breeding population / (islandwide) | (1969) | (2) |
| 113 | rare and presumably on the verge of extinction /
(islandwide) | (1970) | BERA70 |
| 114 | rare and presumably on the verge of extinction /
(islandwide) | (1972) | BERA72 |
| 115 | candidate for the Blue List...no reliable report for
4-5 years / (islandwide) | (1972) | MULM72 |
| 116 | once so common...now very scarce / (islandwide) | (1977) | ATKI77 |
| 117 | study confirmed that populations are precariously low /
(islandwide) | (1978) | SHAR78 |

UNSPECIFIED LOCALITY

- | | | | |
|-----|---|-------------|-----|
| 118 | Banko: Deppe collected 1 specimen / undesignated locality | Jan 1837 | (1) |
| 119 | Banko: Deppe collected 1 specimen / undesignated locality | Jan (?1837) | (1) |

Vestiaria coccinea - O'ahu

- 120 Perkins: seen / on collecting trips vicinity Waianae
Plantation dairy Apr/May 1892 (3)
- 121 Banko: Palmer collected 1 specimen / Waianae Range Mar-May 1893 (1)
- 122 Perkins: seen / good deal of time...spent in climbing...
while camped on the lee side of Waianae mountains,
somewhat to the south of where I had collected in 1892 Feb 1896 (3)
- 123 Banko: Seale collected 2 specimens / undesignated
locality Jan, Feb 1901 (1)
- 124 Banko: Seale collected 6 specimens / Waianae Range Jan, Feb 1901 (1)
- 125 Banko: Miller and Blacow collected 2 specimens /
Waianae Range Apr/May 1903 (1)
- 126 Munro: has been seen in recent years...but must be very
rare / (unspecified localities) (1934) GREH35
- 127 unable to find / (unspecified localities) (23 Mar-14
Apr 1958) EASW58

MULTIQUADRANGLE

- 128 Perkins: more numerous / in places collected in Waianae
Range than along ridges above Nuuanu Valley 1892 (3)
- 129 (G. C.) Munro did not see one...believed heard once or /
twice / fully 200 miles, covering most sections of the
forest...tramping the new CCC trails mid-(1935)... PERR49
continued until
Nov

Vestiaria coccinea - O'ahu

- 130 not recorded on any of the previous highway-related studies / Moanalua Valley, South and North Halawa Valleys (1971?) SHAR78
- 131 all 24 survey records were within forest dominated by native trees...none were recorded lower than 1400 ft. el. / central Koolau Range 19 Dec 1977 to 9 Mar 1978 SHAR78
- 132 Shallenberger: no sightings below 1600 ft. elevation recorded in Elepaio 1939-1978 and most were above 2000 ft. / undesignated localities (Jul 1978) THOL78
- 133 Shallenberger: 10 to 15 observed (250 man-day forest bird survey) / Koolau and Waianae Ranges 1400+ ft.el. (19 Dec 1977 to 9 Mar 1978) THOL78
- 134 Shallenberger: none since 1976 were observed below 1400 feet elevation (250 man-days forest bird surveys) / (South and North Halawa Valleys, Schofield - Waikane Trail, Poamoho Trail, below Mt. Kaala and presumably other areas) (Jul 1978) THOL78

78

Wai'anae District

HALEIWA

- 135 came for honey in winter when driven from the upland forests by the cold rain / big kukui trees and kau tree near my bedroom (Emerson home, Waialua) (1833) EME028
- 136 Perkins: seen / stayed at Mehaulu's (vicinity of Waialua), collected on the ridges of Kaala, Waianae Range Apr/May 1892 (3)
- 137 Perkins: great numbers / along the stream at Kawaihoa (1892/1893) (3)

Vestiaria coccinea - O'ahu

Wai'anae District

- | | | | |
|-----|---|-------------------------------|--------|
| 138 | Banko: Palmer collected 3 specimens / Waialua | Mar-May 1893 | (1) |
| 139 | Perkins: relatively scarce / collecting localities around Kaala | (1893) | (3) |
| 140 | Perkins: relatively common / Kaala in the direction of the Gap | (1893) | (3) |
| 141 | by far the rarest of the 5 species of mountain birds... 4030 hours of patient search...only resulted in securing 6 specimens / on collecting trips from Pukaloa cabin, windward Waianae Mountains, lower edge of forest within few hours climb of Mt. Kaala | (21 Jan to 9 Mar 1901) | BRYW08 |
| 142 | Northwood: plentiful / up Kaala | 23 Oct 1938 | (6) |
| 143 | several detected / walk to bottom of Kaala | 21 May 1939 | (6) |
| 144 | Northwood: heard several times / firebreak trail (?Mt. Kaala) | 3 Sep 1939 | (6) |
| 145 | Northwood: seen / walk to Kaala stream | 12 Nov 1939 | (6) |
| 146 | Northwood: saw several / Kawaihoa trail to summit | 4 Jul 1940 | (6) |
| 147 | Richards: seen / trail to Mt. Kaala, on ridge between E branch of E Makaleha and Kaumokunni Gulches | 14 Mar 1948 | (13) |
| 148 | an unmistakable observation / on Dupont trail on the north flank of Mt. Kaala in the Waianae Range | few days prior to 11 Dec 1972 | ANON73 |

Vestiaria coccinea - O'ahu

Wai'anae District

- | | | | | |
|-----|--|----------------|----------|--------|
| 149 | about 25 reported during survey / near Kaala Mt. | 3000
ft.el. | Dec 1976 | RALC77 |
| 150 | 15 counted in recent surveys / U. S. Army land area near
Mt. Kaala, most in a small area below tramline | | (1977) | SHAR78 |

SCHOFIELD BARRACKS

- | | | | | |
|-----|--|----------------|--------------|--------|
| 151 | Banko: Miller and Blacow collected 2 specimens /
Leileihua Ranch | 3700
ft.el. | Apr/May 1903 | (1) |
| 152 | Northwood: watched immature / within sight of the
house...Palehua | | 22 Jan 1939 | (6) |
| 153 | Northwood: quite a dozen / Palehua | | 24 Nov 1940 | (6) |
| 154 | Northwood: none / Palehua | | 12 Jan 1941 | (6) |
| 155 | Northwood: none / Palehua | | 1 Jun 1941 | (6) |
| 156 | several seen / Kalena | | 14 Mar 1948 | HATG48 |
| 157 | seen / Kalena trail | | 9 May 1948 | CLAM48 |
| 158 | one seen / Kalena trail | | 10 Oct 1948 | JOHE48 |
| 159 | in such numbers / Kalena trail | | 13 Feb 1949 | BIRR49 |
| 160 | none seen nor heard / Kalena trail | | 12 Nov 1950 | KOJU51 |
| 161 | three adults...five juveniles seen / Kalena trail,
above Schofield Barracks | | 14 Sep 1958 | KINJ58 |

Vestiaria coccinea - O'ahu

Wai'anae District

162	heard / Hapapa trail...approach led through pineapple fields close to Schofield	28 Jun 1959	HATG59
163	seen on summit only / Kalena trail	10 Sep 1961	ROCR61
164	one recorded / Palehua, by the cabin on the trail	25 Dec 1964	OBAJ65
165	pair seen / Kalua Gulch near Hapapa trail	27 Dec 1964	OBAJ65
166	at least three seen / Palikea (trail)	14 May (1967)	ANON67b
167	(W.) Hay: has seen...on past trips / in one of the valleys under the main peak...Mt. Kaua	10,11 Jun 1967	DONW67b
167a	found none	10,11 Jun 1967	DONW67b
168	possible to see...if lucky / along trail to the top of Palikea	(17 Jun 1967)	DONW67b
169	1 reported / in the Palikea area of the Waianae Range	about 2 months ago (11 Dec 1972)	ANON73

Ko'olau District

KAHUKU

170	Northwood: none / Laie trail to summit and half-mile south	23 Jun 1940	(6)
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Vestiaria coccinea - O'ahu

Ko'olau District

HAUULA

171	Northwood: 31 seen or heard / Poamoho trail, Forest Reserve	3 May 1936	(6)
172	Northwood: plentiful and singing / Poamoho trail	24 Jan 1937	(6)
173	Northwood: heard / Poamoho trail	22 May 1938	(6)
174	Northwood: seen / Poamoho trail	24 Nov 1938	(6)
175	Northwood: seen / Poamoho trail	2 Jan 1939	(6)
176	Northwood: found / Poamoho trail	23 May 1939	(6)
177	Northwood: heard / Poamoho trail	26 May 1939	(6)
178	Northwood: many young about / in Koa chiefly... along Poamoho trail	10 Sep 1939	(6)
179	Northwood: seen / Poamoho trail	17 Sep 1939	(6)
180	Northwood: found / Poamoho to Summit trail	17 Dec 1939	(6)
181	2 seen (Christmas Count) / 2 observers, 5 hours, 4 miles / along Opaehula trail and return	24 Dec (1939)	BALH40
182	2 censused (Christmas Count) 2 observers, 5 hours, 4 miles / along Opaehula trail and return	24 Dec 1939	NORJ40
183	Northwood: none / Castle trail to summit	28 Jul 1940	(6)

Vestiaria coccinea - O'ahu

Ko'olau District

184	Northwood: heard one / Poamoho trail	27 Sep 1940	(6)
185	Northwood: present / Poamoho trail	8 Dec 1940	(6)
186	4 censused (15 miles, 9 hours) / Poamoho-Summit-Castle forest trails, el. 1490-2800-250 ft.	22 Dec 1940	ANON41
187	4 seen (Christmas Count) party of unspecified numbers 15 miles, 9 hours (0830 to 1730) / forest trails, Poamoho-Castle-Summit, el. 1490-2800-250 ft.	22 Dec (1940)	BALH41
188	Northwood: seen / Poamoho trail	29 Jun 1941	(6)
189	saw 1, heard 3 others, / forest above Wahiawa	31 Dec (1944)	COGH45
190	heard several times but not seen / Poamoho trail	Sep (1945)	FINR45
191	a few seen / Poamoho trail	10 Mar 1946	PEAG46a
192	2 seen / lower third of the Poamoho trail	23 Nov 1947	PORR48
193	seen / Poamoho trail	8 May 1949	CAMM49
194	one counted / Poamoho trail	10 Jul 1949	CHOH49
195	9 censused (Christmas Count) / Poamoho trail	26 Dec 1949	HATG50
196	one noted / Poamoho trail	5 Mar 1950	BRAR50
197	seen / Poamoho trail	12 Mar 1950	PORH50

Vestiaria coccinea - O'ahu

Ko'olau District

198	Richards: none seen...seemed unusual because of the countless ohia trees in bloom / Poamoho trail between Poamoho and Halemano Streams (1030-1930 hours)	1500 -2700 ft.el.	9 Sep 1950	(13)
199	5 censused (Christmas Count) / Poamoho trail		31 Dec 1950	HATG51
200	2 counted / Poamoho trail		11 Feb 1951	BOTI51
201	2 seen / Poamoho trail		10 Jun 1951	ANON51
202	1 counted / Poamoho trail		9 Jul 1951	THOW51
203	Richards: 1 seen (1010-1300 hours) / hike for approximately 1/2 mile up Poamoho trail	1500 ft.el.	3 Jan 1952	(13)
204	2 censused (Christmas Count) 6 1/4 hours on foot / Poamoho trail		21 Dec 1952	ANON53
205	one seen / Poamoho trail		8 May 1955	LABA55
206	one seen / Poamoho trail		10 Feb 19(5)7	MACL57
207	pair seen / Poamoho trail		14 Apr 1957	HANC57
208	one present / Poamoho trail all the way to summit		16 Mar 1958	ROCR58
209	one seen along trail; seven along jeep road / Poamoho trail...when the eucalyptus and melaleuca trees are in bloom the jeep road is better birding		23 Nov 1958	KOJU59
210	none seen / Poamoho trail		10 May 1959	KINJ59a

Vestiaria coccinea - O'ahu

Ko'olau District

211	feel pretty certain one heard / Wahiawa trail... leading into the Koolau out of Wahiawa	24 May 1959	KINJ59b
212	unable to see or hear / Poamoho trail	22 Nov 1959	HANC60b
213	heard / Poamoho trail	28 Feb 1960	SMAM60
214	one seen / Poamoho trail	9 Oct 1960	KOJU60
215	two noted / Poamoho trail	28 Nov 1963	ANON64
216	seen / Poamoho trail	Jan 1964	ORDM64
217	one or two / Poamoho trail	12 Apr 1964	LABA64
218	not seen / Poamoho trail	Feb 1965	KINJ65
219	saw two and heard one / Poamoho trail	5 Jul 1965	DONW65a
220	one seen, one heard / Opaepala trail...covered at least two-thirds of this trail and found conditions just as disappointing as before	18 Nov 1965	DONW66
221	none / Poamoho trail	17 Apr 1966	DONW66a
222	seen / Poamoho trail	8 Jan 1967	ANON67a
223	none seen or heard...a possible...sighting... reported...the week before / Poamoho trail	11 Jun 1972	MULW72b
224	1 seen and heard...pair observed short time later... 100 yards down / on the jeep road of Poamoho trail	9 Dec 1972	ANON73

Vestiaria coccinea - O'ahu

Ko'olau District

- | | | | |
|-----|---|---------------------------|---------|
| 225 | 1 heard and seen / about 1 mile from summit of Poamoho trail...where found occasionally in recent years | 5 Feb 1977 | PYLR77 |
| 226 | 1 seen...2 (probably others) heard / at the 'Iiwi Spot' on the Poamoho trail | 12 Jun 1977 | PYLR77a |
| 227 | not recorded on recent surveys, except for 1 counted on Poamoho trail / highway project study area | 1977-02-04 | SHAR77 |
| 228 | total 15 records...observations on consecutive days...maximum of 2 seen at one time...at least 3, possibly more, involved / Poamoho trail | 19 Dec 1977 to 9 Mar 1978 | SHAR78 |

KAHANA

- | | | | |
|-----|---|---------------------------|--------|
| 229 | possibly heard / Waikane Ditch trail | 9 Feb 1958 | HANC58 |
| 230 | from 1 to 3 sighted on 5 occasions in early morning hours and in evening before sunset / in Sacred Falls area, near sea-level residence Punaluu, near the Hauula border | Jul 1974 to Jan 1975 | THOL78 |
| 231 | total of 4 records compiled during surveys...only 2 seen at any one time / Schofield-Waikane area, including valleys north and south of the trail | 19 Dec 1977 to 9 Mar 1978 | SHAR78 |

WAIPAHI

- | | | | |
|-----|---|---------------------|-----|
| 232 | Northwood: saw several...within a mile and a half of trailhead / Kipapa trail | 19, 25, 26 Feb 1939 | (6) |
|-----|---|---------------------|-----|

Vestiaria coccinea - O'ahu

Ko'olau District

233	Northwood: common...in one place at least 2 pairs were within 50 yards of each other...considered a rare bird on Oahu / for a distance of about a mile along (Kipapa) Trail from 2 1/2 to 3 1/2 or 4 miles from the trail entrance...near the top of the spur ridge which the trail follows most of the time	19, 26 Feb 1939	(6)
234	Northwood: seen / Kipapa trail	10 Mar 1940	(6)
235	Northwood: heard / Kipapa trail to Uncle Tom's cabin	9 Jun 1940	(6)
236	heard at least 6 and saw 1 flying / Kipapa trail	16 Jun 1940	ANON40
237	Northwood: seen and heard / Kipapa trail	19 Jan 1941	(6)
238	2 seen / Upper Kipapa Gulch trail (forest trail #6)	10 Jan 1946	ROCR47
239	2 censused...lowest (Christmas Count)...for this trail...confined mostly to the middle forest...one noted on flowering eucalyptus trees well in the forest / Kipapa trail (7 miles hiked)	29 Dec 1946	ANON47
240	4 seen / Kipapa trail	11 Apr 1948	PEDB48
241	1 heard / Kipapa trail	11 Jun 1950	KOJU50
242	none seen / Kipapa trail	3 Dec 1965	DONW66a
243	1 seen / on Kipapa Ridge 1/2 mile from the summit	15 May 1977	MULM77

Vestiaria coccinea - O'ahu District

Ko'olau District

KANEOHE

- | | | | | |
|-----|--|-------------|-----------------------------|---------|
| 244 | saw one nesting / large ohia forest of Waiolani mountains | 1300 ft.el. | 27 Feb (1900) | SEAA00 |
| 245 | Northwood: few / Waimano trail | | 16 Apr 1938 | (6) |
| 246 | 1 seen and heard / Aiea Heights trail | | 12 Nov 1961 | MARA62b |
| 247 | total of 5 records compiled during surveys...at least 3 birds and probably a 4th were involved... 4 records were at different locations in the upper NHV amphitheater and the 5th, seen from Halawa trail (approximately 1400 ft.), was in SHV... / North and South Halawa Valleys | | (19 Dec 1977 to 9 Mar 1978) | SHAR78 |
| 248 | sightings of immatures during the surveys is highly suggestive that breeding is occurring / North Halawa Valley | | (19 Dec 1977 to 9 Mar 1978) | SHAR78 |

HONOLULU

- | | | | | |
|-----|--|--|----------------------------|--------|
| 249 | two shot: natives report it rather scarce / (Nuuanu Valley) | | 13 May 1825 | BLOA25 |
| 250 | Perkins: quite rare / Waolani and Konahuanui sides of Nuuanu Valley | | Oct 1892 | (3) |
| 251 | once so common...now very scarce...only 2 have been secured...during the entire 4 months I have been collecting / (vicinity of Honolulu) | | 12 Nov 1899 to 20 Mar 1900 | SEAA00 |

Vestiaria coccinea - O'ahu

Ko'olau District

252	seen...in...garden...in fair weather...and...often driven down to the shore from the mountain ridges, which are its usual haunt, by severe storms / Nuuanu Valley about 120 ft. above the sea	(1899)	BRIW99
253	(W. F.) Wilson: noticed on 2 or 3 occasions / in...garden situated on Prospect Street, on the south side of Punchbowl Hill...about one-third of a mile from the business center of Honolulu	ca. 1910	MACJ22
254	present, in small numbers, at the present time / Manoa Rain Forest	(1917)	MACV17
255	2 seen / Tantalus Loop trail	14 Oct 1945	MACJ45
256	2 censused (Christmas Count) / Alewa Heights, Kapalama Heights, Tantalus trail, Woodlawn-St. Louis trail, Kipapa trail	29 Dec 1946	ANON47
257	2 censused (Christmas Count) / Tantalus and Punchbowl	23 Dec 1962	ANON62
258	not found / Moanalua Valley	(1972)	MULW72a

Vestiaria coccinea - Moloka'i

ISLANDWIDE INFERENCE

- | | | | |
|-----|--|----------------------------|--------|
| 260 | one of the most abundant...of all the Drepanid birds /
found throughout the woods | (1893/1896) | PERR03 |
| 261 | the species most commonly met with...next to the
Apapane and Amakihi...fly from one valley to another...
in small loose flocks...10 carefully selected (specimens)
and 3 nests secured / generally frequent the Ohia forests,
but occasionally they will extend their range down...as
in Wailau and Pelekunu valleys, so as to reach the seashore | (15 Apr to 15
Jun 1907) | BRYW08 |
| 262 | close to extinction / (islandwide) | 1907-1923 | ATKI77 |
| 263 | probably extinct / (islandwide) | (1970) | BERA70 |
| 264 | close to extinction / (islandwide) | (1972) | BERA72 |
| 265 | candidate for the Blue List / (islandwide) | (1972) | MULM72 |

UNSPECIFIED LOCALITY

- | | | | |
|-----|---|------------------------------------|-----|
| 266 | Banko: Perkins collected one specimen / undesignated
locality | Sep 1893 | (1) |
| 267 | Banko: Perkins collected one specimen / undesignated
locality | Feb 1902 | (1) |
| 268 | Banko: Munro collected two specimens / undesignated
localities | 29 Oct 1906 (1)
13 Nov 1906 (1) | (1) |

Vestiaria coccinea - Moloka'i

- | | | | |
|-----|---|--|--------|
| 269 | several persons claimed to have seen and heard /
undesignated localities | unspecified
date (letter
dated 17 Aug
1965) | PEKN67 |
| 270 | HDFG: occurs as a breeding population / undesignated
localities | (1969) | (2) |

KAUNAKAKI

- | | | | |
|-----|---|------------------------------------|--------|
| 271 | seen / verdant forested ravine...(near) small romantic
lake (now Meyer Lake) | 2000 (prior 1900;
ft.el. ?1895) | SCHH00 |
|-----|---|------------------------------------|--------|

KAMALO

- | | | | |
|-----|---|--------------------------------|--------|
| 272 | Perkins: seen / up from Makakupaia | 13 May (1893) | (3) |
| 273 | Perkins: saw a number / in blossoming ohia tree in high
forest above Makakupaia near Palekunu Pali | 27 Jun (1893) | (3) |
| 274 | Banko: Bryan collected 1 specimen / Waihana (Waihanau) | Apr to Jun
1907 | (1) |
| 275 | Banko: Bryan collected 3 specimens / Kilohana | Apr to Jun
1907 | (1) |
| 276 | Banko: Bryan collected 2 specimens / Punalu (Punalau) | Apr to Jun
1907 | (1) |
| 277 | Woodside: may have seen / Wailau Valley Cliff trail | unspecified
(3-6 Feb 1948?) | DONW63 |

Vestiaria coccinea - Moloka'i

- | | | | |
|-----|--|----------------------------------|---------|
| 278 | 1 heard and seen...the only Iiwi seen during the 2 weeks on Molokai / 1 mile north of the (Puu Kolehale) cabin...while returning from the Papaala Pali | (early after-noon on 9 Jan 1972) | PRAT73 |
| 279 | Pratt: only one heard and seen (during two weeks field trip) / one mile north of Puu Kolehale...in tall well-developed forest | 9 Jan (1972) | (21) |
| 280 | rare...1 recorded during 43 ten-minute counts / immediately above Puu Kolehale cabin...in Molokai Forest Reserve above 4050 ft. elevation | 21-25 Jul 1975 | SCOJ77b |
| 281 | rare...1 recorded during 25 ten-minute counts / above Puu Kolehale cabin...in Molokai Forest Reserve below 4050 ft. elevation | 21-25 Jul 1975 | SCOJ77b |

HALAWA

- | | | | |
|-----|--|-----------------|--------|
| 282 | few seen / hills above Pukoo | 12 Dec (1892) | ROTW00 |
| 283 | flower trees were full / hills above Halawa in forest much higher than Pukoo | Jan 1893 | ROTW00 |
| 284 | Banko: Bryan collected 1 specimen / Brown's Ranch (Puu o Hoku) | Apr to Jun 1907 | (1) |

Vestiaria coccinea - Lana'i

ISLANDWIDE INFERENCE

285	one of the most abundant...of all the Drepanid birds / found throughout the woods	(1894)	PERR03
286	Munro survey: probably increasing / (islandwide)	(1923)	GREH24
287	probably increasing / (islandwide)	1923 report to Bishop Museum	MUNG44
288	fairly common...diminishing year by year / (islandwide)	1923	MUNG44
289	Munro: less in evidence, if anything / (islandwide)	1927	GREH28
290	Munro: rarely seen during the year / (islandwide)	(1928)	GREH29
291	disappeared entirely / (islandwide)	by 1929	MUNG44
292	Munro: disappeared...not one specimen...seen / (islandwide)	(1929)	GREH30
293	Munro: none seen / (islandwide)	(1930)	GREH31
294	HDFG: ? occurs as a breeding population / (islandwide)	(1969)	(2)
295	extinct / (islandwide)	(1970)	BERA70
296	candidate for the Blue List...may be extinct / (islandwide)	(1972)	MULM72
297	probably extinct / (islandwide)	(1977)	ATKI77

Vestiaria coccinea - Maui

ISLANDWIDE INFERENCE

298	one of the most abundant...of all the Drepanid birds / found throughout the woods (islandwide)	(1894/1896)	PERR03
299	occurs as a breeding population / (islandwide)	(1969)	(2)
300	still fairly common / (islandwide)	(1970)	BERA70
301	still fairly common / (islandwide)...where, in general, the birds are found at elevations above 2,800 ft.	(1972)	BERA72
302	remains moderately abundant / in local native forests (islandwide)	(1972)	MULM72
303	fairly common / (islandwide)	(1977)	ATKI77

UNSPECIFIED LOCALITY

304	Banko: Wilson collected 1 specimen / undesignated locality	Jul 1888	(1)
305	Palmer: only a few seen / Camp No. 2...hemmed about by ti-vines; locality unspecified	30 Aug (1892)	ROTW00
306	Banko: Perkins collected 1 specimen / undesignated locality	(1894/1896/ 1897)	(1)
307	unable to find / unspecified localities visited	(23 Mar to 14 Apr 1958)	EASW58
308	seen / in brush on flowering Sophora, unspecified locality	(23-30 Apr 1961)	BOLP61
309	abundant / Haleakala crater, unspecified locality	9 Nov 1963	ANON64

Vestiaria coccinea - Maui

West Maui District

LAHAINA

- | | | | | |
|-----|--|-------------------------|------------|--------|
| 310 | Munro trip: heard calls / up one of the ridges
on the northwest side of West Maui | 3000
-4000
ft.el. | 1927 | GREH28 |
| 311 | Pratt: a few pairs present / Amalu Gulch | 3750
ft.el. | (Jan 1972) | (21) |

WAILUKU

- | | | | | |
|-----|--|--|----------|-----|
| 312 | Perkins: seen / ascent from the neighborhood of
Waihee...to top of the mountain | | May 1896 | (3) |
|-----|--|--|----------|-----|

East Maui District

KILOHANA

- | | | | | |
|-----|---|-----------------------|------------|--------|
| 313 | observed many / vicinity Olinda | ca.
4000
ft.el. | (Jul 1879) | FINO80 |
| 314 | one immature killed / Kula District | | Jul 1888 | WILS90 |
| 315 | Palmer: one seen / (encamped near Mr. Hocking's house
north of Olinda) | | (Jul 1892) | ROTW00 |
| 316 | Banko: Perkins collected 1 specimen / Haleakala | 5000
ft.el. | 1894 | (1) |
| 317 | Banko: Henshaw collected 3 specimens / Olinda | | Jun 1901 | (1) |
| 318 | Banko: Henshaw collected 3 specimens / Ukulele | | Jun 1901 | (1) |

Vestiaria coccinea - Maui

East Maui District

- | | | | | |
|-----|---|-------------------------|-------------------------|--------|
| 319 | Munro: not common...during 4 days in the forest / along the Kula and Haleakala pipelines...several miles into the heart of the forest...especially at the higher elevations where the Ohia was blooming | 4300
-5000
ft.el. | 1927 | GREH28 |
| 320 | Banko: unspecified collector (?Munro) collected 2 specimens / near Olinda | | Feb 1928 | (1) |
| 321 | Munro: fairly common in the outer part of the forest, but not much in evidence in the very wet regions / the forest between, above, and below...trails along the Kula Ranch pipeline...to the end of the flume at the Haepuaena stream...and Haleakala Ranch pipeline (to) the Waiakamoi stream | | 9 days in Feb
(1928) | GREH29 |
| 322 | NPS: more than 100 estimated / 5-acre grove of tree alfalfa <u>Cysitis proliferus</u> , Haleakala Ranch below Puu Nianiau, Haleakala | | 22 Oct 1941 | (7) |
| 323 | NPS: seen / rain forest below Puu Nianiau, Haleakala | | (Feb 1946) | (7) |
| 324 | fairly common / in Hosmer Grove and the forest behind Paliku (Haleakala National Park) | | (1961) | DUNW61 |
| 325 | relatively abundant / Kula pipeline near Olinda | 4000
ft.el. | Jul 1965 | SPIH66 |
| 326 | King: six seen or heard / on ridge west of Waikamoi Gulch | 5800
ft.el. | 12 Aug 1970 | (14) |
| 327 | King: several seen and heard / on south side Honomanu Gulch | | 23 Aug 1970 | (14) |

Vestiaria coccinea - Maui

East Maui District

NAHIKU

- 328 Richards: estimated 10-15 seen (0700-1330 hours) / 6300 5 Dec 1950 (13)
hiked around in roughly 5 acre area, NW Puu Alaea ft.el.
- 329 third most abundant species after apapane and creeper... 11-14 Apr ASHP63
followed by amakihi / rain forest, about one-half mile 1963
west of Puu Alaea, northeast rim of Haleakala crater
- 330 Ward: 12 seen / (Puu Alaea vicinity) overlooking valley 15 May 1964 (5)
- 331 Shallenberger: among five most common birds seen / 6-13 Apr 1974 (26)
Hama Rain Forest Study Area, down forest trail as far
as 6200 ft. elevation
- 332 one of five endemic forest birds most commonly heard 6-13 Apr 1974 SHAR74
and seen / Upper Koolau Forest Reserve (Hana Rain field trip
Forest Project base camp area)
- 333 total of 120 seen at 18 half-hour periods and stations 30 Apr 1975 SCOJ77a
...classed as abundant / 1860-2200 m. el. at upper 1 May 1975
edge of forest...Koolau Forest Reserve
- 334 Stemmerman: observed 1 / ca. 1 mile from the nearest Jun 1976 (33)
forest at Paliku, at Oilipuu

Haleakala National Park

MULTIQUADRANGLE (Kipahulu Valley)

- 335 Palmer: a few seen / Camp No. 5...somewhat drier ca. 18 Sep (1892) ROTW00
middle ohia forest, Kipahulu Valley 5400
ft.el.

Vestiaria coccinea - Maui

336	Hjort: quite common / well into the forest (Kipahulu Valley)		19-23 Feb 1945	(8)
337	Hjort: several seen / (Kipahulu Valley)	below 5800 ft.el.	19-23 Feb 1945	(8)
338	Hjort: one heard / (Kipahulu Valley)	ca. 2700 ft.el.	19-23 Feb 1945	(8)
339	Baldwin: found / upper fringe of forest down to 5050 ft. elevation, Kipahulu Valley		29 Nov to 11 Dec 1945	(9)
340	Baldwin: common / Kipahulu Valley	5050 ft.el.	29 Nov to 11 Dec 1945	(9)
341	Baldwin: fairly numerous / Kipahulu Valley	4200- 3800 ft.el.	29 Nov to 11 Dec 1945	(9)
342	Baldwin: present / Kipahulu Valley	3400 ft.el.	29 Nov to 11 Dec 1945	(9)
343	Baldwin: present / down to 2850 ft. elevation, Kipahulu Valley		29 Nov to 11 Dec 1945	(9)
344	Baldwin: heard occasionally / Kipahulu Valley	ca. 2600 ft.el.	29 Nov to 11 Dec 1945	(9)
345	extremely abundant...second only to apapane in numbers / Kipahulu Valley	6500 ft.el.	11-14 Apr 1963	ASHP63

Vestiaria coccinea - Maui

East Maui District

- 346 saw one / Paliku 10 Jul 1963 YOCC68
- 347 saw two / Kipahulu Gap 12 Jul 1963 YOCC68
- 348 saw one / in a grove of ohia trees about 2/3 of the way up Pali back of Paliku cabin 1 Aug 1963 YOCC68
- 349 saw four / in the rain forest area of Kipahulu... near Paliku (Jul-Aug 1963) YOCC68
- 350 Warner: no drepaniids whatsoever encountered below 860 m. (2800 ft.) elevation...at 860 m. drepaniids began to appear, but in extremely low numbers...from 860 m. (2800 ft.) to about 1050 m. (3300 ft.) steady increase in abundance of drepaniids with impression that amakihi and apapane were most numerous, smaller numbers of creepers and decidedly fewer iiwis...from 1050 m. (3300 ft.) to 1540 m. (5000 ft.), based on subjective relative abundance scale of 0 to 10, iiwis were second (6) behind apapane (10), first...relatively large numbers of immature drepaniids noted... after a few days in the rain forest it became clear that impressions of relative abundance were misleading... iiwi being upper canopy dwellers and whose red marking was very similar to the ohia flowers made it difficult to examine in any quantitative way...from 1540 m. (5000 ft.) to 2260 m. (7350 ft.) elevation, based on a subjective relative abundance scale of 0 to 10 (not directly comparable to that of lower elevation), iiwis were judged 7, second after apapane 10...relative numbers increased...Broussaisia a principal food of immatures...adults spending most of their time in the ohia canopy...adult(s) also noted feeding on nectar of Trematolobelia macrostachys. / Kipahulu Valley; biological survey from sea-level to tree-line 2-31 Aug 1967 (22)

Vestiaria coccinea - Maui

East Maui District

351	Warner: few / Kipahulu Valley	2800 -3300 ft.el.	Aug 1967	(22)
352	Warner: relatively common / Kipahulu Valley	3300 -5000 ft.el.	Aug 1967	(22)
353	Warner: relatively common / Kipahulu Valley	5000 -7350 ft.el.	Aug 1967	(22)
354	seen / south rim Kipahulu Valley below Kuiki peak		22-26 Jul 1969	MATP70
355	King: none seen or heard...three hours of observation /on South ridge above south side of Kipahulu Valley	6200 ft.el.	4 Sep 1970	(14)
356	Conant and Stemmerman: rare...though not as uncommon as the Maui Creeper...restricted distribution, limited almost entirely to wet forest...information derived from data collected on surveys throughout the entire Crater District / Crater District		(Jun 1976 to Aug 1978)	(33)

KILOHANA

357	Baldwin: several seen / between Holua cabin and 4500 ft. elevation (Keane Valley)		20-25 Nov 1945	(9)
358	Baldwin: relatively common / Ainahou (?), Keane Valley		20-25 Nov 1945	(9)
359	occasional / Waikamoi to inside crater		7 Jul to 11 Sep 1951	BONH51
360	saw more...than on combined field trips on Oahu / Hosmer Grove		(1961)	STEE61

Vestiaria coccinea - Maui

East Maui District

361	in large numbers / Hosmer Grove	23-30 Apr 1961	BOLP61
362	one heard / Hosmer Grove	first two weeks of Oct (1961)	MARA62a
363	seen / Hosmer Grove	(1966)	FURW66
364	was alive with / Hosmer Grove	16-23 Nov 1966	ORDW67
365	one seen / Hosmer Grove	30 Dec 1967	ORER68
366	King: three seen / Hosmer Grove	12 Jun 1970	(14)
367	observed and heard at least eight / Hosmer Grove	25-31 Dec 1970	OTIG71
368	counted / Hosmer Grove	(2 Jun 1971)	STRC71

NAHIKI

369	Richards: noted, number unspecified (0830-1800 hours) / hike from Paliku cabin to approximately 8000 ft., north of Kaluanui, thence downslope between Puu Alaea and small hill just west of it continuing for about 1/2 mile, Haleakala	4 Dec 1950	(13)
370	Richards: estimated 10-15 seen, (1430-1645 hours), estimated 3-4 acres covered / forest just to east and at base of cliff, Paliku cabin, Haleakala	6 Dec 1950	(13)
371	busily feeding / vicinity Paliku cabin	11-14 Apr 1963	ASHP63

Vestiaria coccinea - Maui

East Maui District

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|-----|--|----------------|-------------|--------|
| 372 | van Riper: one observed, walking survey / Paliku,
Haleakala | 6600
ft.el. | 14 Mar 1971 | (12) |
| 373 | present / near the start of the downhill section of
the Kaupo Gap trail | | 24 Aug 1971 | HANR75 |

Vestiaria coccinea - Hawai'i

ISLANDWIDE INFERENCE

374	one of the most abundant...of all the Drepanid birds / found throughout the woods	(1892-1896)	PERR03
375	still fairly common / (islandwide)	(1970)	BERA70
376	HDFG: occurs as a breeding population / (islandwide)	(1969)	(2)
377	remains moderately abundant / in local native forests	(1972)	MULM72
378	still fairly common / where, in general, the birds are found at elevations above 2,800 ft.	(1972)	BERA72
379	now fairly common / (islandwide)	(1977)	ATKI77

UNSPECIFIED LOCALITY

380	frequently occurs / sea beach, driven by high winds	(1887-1888)	WILS90b
381	Banko: Wilson collected 11 specimens / unspecified localities	1887/1888	(1)
382	Banko: Wilson collected one specimen / Kaualoa (?)	1887/1888	(1)
383	Palmer: always going about in pairs and being very plentiful / elevations of from 5,000 to 8,000 feet and so on	(1900)	ROTW00
384	Banko: Walcott collected one specimen / unspecified locality	1901	(1)
385	absent / above the 5,000 ft. elevation	May 1940	DONW40b

Vestiaria coccinea - Hawai'i

MULTIDISTRICT

- | | | | |
|-----|---|-------------------------------|------|
| 386 | Donaghho: when sufficient food offers, it will migrate up to the mamane forests / on Mauna Kea and Hualalai | (mid 1930's) | (27) |
| 387 | Baldwin: less numerous than in Hawaii National Park... over when Kipaka Kulalio is in good form / in suitable habitats, Puu Lehua Ranch | 21 Nov 1942
5000
ft.el. | (15) |

Kohala District

HAWI

- | | | | |
|-----|--|------------|--------|
| 388 | Palmer: a few seen / (encamped in Kohala Mountains a day's travel from Kohala) | (Jan 1892) | ROTW00 |
|-----|--|------------|--------|

KAMUELA

- | | | | |
|-----|--|--|---------------------|
| 389 | Banko: Wilson collected 3 specimens / Waimea | 1887/1888 | (1) |
| 390 | Banko: Wilson collected 1 specimen / Punalala (?), Waimea | 1887/1888 | (1) |
| 391 | present / rainforest...about a mile...from the school (Hawaii Preparatory Academy) | unspecified
(letter dated
10 Apr 1967) | PRAT67 |
| 392 | van Riper: 4 seen, 1 heard; 3 hours study-survey / Kohala Study Area | 23 Jan 1971 | (12) |
| 393 | van Riper: one observed (1400-1630 hours) study-survey / Kohala Study Area | 3000
-3500
ft.el. | 23 Jan 1971
(12) |

Vestiaria coccinea - Hawai'i

Kohala District

394	van Riper: 5 seen, 2 heard; 5 hours study-survey / Kohala Study Area	24 Jan 1971	(12)
395	van Riper: one observed (1445-1700 hours) study-survey /Kohala Study Area	23 Feb 1971	(12)
396	van Riper: 1 seen, none heard; 4.5 hours study-survey/ Kohala Study Area	23 Feb 1971	(12)
397	van Riper: none seen, 2 heard; 1 hour study-survey / Kohala Study Area	13 Mar 1971	(12)
398	van Riper: 3 seen, 1 heard; 4 hours study-survey / Kohala Study Area	19 Mar 1971	(12)
399	van Riper: 3 seen (0700-1600 hours) walking survey / Hamakua ditch up to and through headwaters of Kawainui stream	22 Mar 1971	(12)
400	van Riper: 3 seen, 2 heard; 3 hours study-survey / Kohala Study Area	12 Apr 1971	(12)
401	van Riper: 2 seen, 4 heard; 5 hours study-survey / Kohala Study Area	10 May 1971	(12)
402	van Riper: one seen, 5 hours walking survey / Kihena ditch, Kohala Mtns.	8 Jul 1971	(12)
403	van Riper: none seen, unspecified hours walking survey /Kihena ditch, Kohala Mtns.	9 Jul 1971	(12)

Vestiaria coccinea - Hawai'i

Kohala District

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|-----|---|---------------------------------------|------|
| 404 | van Riper: none heard or seen; 1.5, 5, 4, 5 hours respectively / Kohala Study Area | 23 May,
25, 29 Jun,
16 Jul 1971 | (12) |
| 405 | van Riper: 5 seen, 4 heard; 5 1/2 hours study-survey/
Kohala Study Area | 13 Jan 1972 | (12) |
| 406 | van Riper: not one seen or heard on multiple study-survey trips / Kohala Study Area | Sep-Dec 1972 | (12) |

Kona District

UNSPECIFIED LOCALITY

- | | | | | | |
|-----|-----|--|-----------------|-------------|---------|
| 901 | 407 | in great numbers / among stunted ohia trees growing among the clinker beds of a comparatively recent lava flow, Kona | 5000 ft.el. | 10 Jun 1887 | WILS90b |
| | 408 | seen / District of Kona | 6000 ft.el. | (1887-1888) | WILS90b |
| | 409 | met with / District of Kona | 6000 ft.el. | (1887-1888) | WILS90b |
| | 410 | Banko: Wilson collected 10 specimens / Kona District | | 1887/1888 | (1) |
| | 411 | Perkins: hordes / (? vicinity Pulehua) | ca. 2500 ft.el. | Jun 1892 | (3) |
| | 412 | Banko: Koebele collected 3 specimens / Kona District | | 1894 | (1) |
| | 413 | Donaghho: common / on Hualalai | | 1935 | (27) |

Vestiaria coccinea - Hawai'i

Kona District

MULTIQUADRANGLE

- 414 extremely common / extremely...wide-ranging, far more
so than the crimson (apapane); even comes into the
lots in front of the houses, visiting the peach and
rose trees (Jun/Oct 1892) PERR93
- 415 Munro survey: heard...not numerous / forests of
Puuwaawaa Ranch 1923 GREH24
- 416 not uncommon / in the Mamane belt, S Hualalai May 1940 DONW40b
- 417 unusually common / in the upper Koa forest of S
Hualalai May 1940 DONW40b
- 418 Baldwin: heard and seen...not so abundant here as
above Poohohoo (Puuwaawaa Ranch)...more numerous than
Apapane / grazed forest vicinity cinder cone above
Huehue Ranch Hdqs. 3500 9 Sep 1949 (15)
-4000 ft.el.

PUU ANAHULU

- 419 Banko: Wilson collected 5 specimens / Puuwaawaa 1887/1888 (1)
- 420 Baldwin: none / upper reaches of...Kipuka Kalawamauna
(land of Puuanahulu)...in three types of dry forest 15 Apr 1943 (15)

HUALALAI

- 421 numerous...left behind / crossing the Puuwaawaa line...
on hike up Hualalai going up slightly west of south
from Poohohoo 16-21 Nov 1944 BALP69

Vestiaria coccinea - Hawai'i

Kona District

422	Richards: great numbers...judge 10 or 12 seen in area about 400 yds. in diameter / horseback from Hdqs. Puuwaawaa Ranch to Shangrila...hike 1/4 mile beyond		25 Aug 1950	(13)
423	Richards: especially noticeable by their absence (compared with previous day near Shangrila / half-way between Poohohoo and Puu Nahaha...near Shangrila... Puuwaawaa Ranch		26 Aug 1950	(13)
424	Richards: very plentiful, possibly 15 or 20 seen and more heard / near Shangrila, Puuwaawaa Ranch	4250 -4600 ft.el.	26 Sep 1950	(13)
425	Richards: present in forest in unspecified numbers / along trail to Hualalai Summit from Shangrila, Puuwaawaa Ranch	4250 -8250 ft.el.	27 Sep 1950	(13)
426	Richards: several noted (0900-1900 hours) south of Shangrila, Puuwaawaa Ranch...back and forth all day	4250 -4550 ft.el.	28 Sep 1950	(13)
427	Richards: noted, number unspecified (0700-1845 hours) 20 Oct; 0830-1100 hours 21 Oct) / Shangrila area, up to 1/4 mile south of cabin, Puuwaawaa Ranch	4250 4500 ft.el.	20, 21 Oct 1950	(13)
428	van Riper: 2 observed (0800-1300 hours) walking survey /Puuwaawaa Ranch, slopes of Hualalai		11 Feb 1971	(12)
429	van Riper: one observed (0800-1215 hours) walking survey / Puuwaawaa Ranch		11 Feb 1971	(12)
430	van Riper: 3 observed (0730-1200 hours) walking survey / Puuwaawaa Ranch		11 Feb 1971	(12)

Vestiaria coccinea - Hawai'i

Kona District

KAILUA

431	seen / cinder cone, land of Kaupaulehu, North Kona	4121 ft.el.	9 Sep 1949	BALP69
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PUU LEHUA

432	Banko: Henshaw collected 1 specimen / Pulehua Ranch		1897-1902	(1)
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433	Baldwin: Baybrook, 20 years at Pulehua: always been numerous...found / at the Kealakekua lava flow... south of Pulehua	map el. 5000 ft.el.	19 Nov 1942	(15)
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434	Baldwin: present / east of Ahuaumi Heiau...a pahoe-hoe flow covered with pukiawe, aalii...occasional groves or borders of ohia and mamane...which harbored this species		20 Nov 1942	(15)
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435	Baldwin: locally common / from Pulehua Ranch house up to about 6300 ft. on Mauna Loa about 4 1/2 miles directly east		21 Nov 1942	(15)
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436	Baldwin: in good numbers / directly east of Pulehua Ranch house	5600 ft.el.	21 Nov 1942	(15)
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437	common / Pulehua Ranch, north Kona		(1942)	BALP44
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438	Richards: common / on trail to Pulehua (Ranch house) from Papaloa		24 Aug 1950	(13)
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Vestiaria coccinea - Hawai'i

Kona District

- 439 Richards: fairly abundant (0930-1720 hours) / North 4850 11 Jan 1951 (13)
New Field, South New Field, 1-3 miles south of Pulehua -5150
Mountain House, type locality of Psittirostra palmeri ft.el.
and P. flaviceps (refer to source for description of
route hiked)
- 440 one can still find but their numbers have been (1973) VANC73
greatly reduced / Pulehua

KEALAKEKUA

- 441 exceeding bright scarlet colour; the wings black, Mar 1779 COOJ84
and edged with white; and the tail black; its native
name is eeeve...a young bird, or a variety of the
foregoing, is variegated with red, brown, and yellow /
(Kealakekua)

KAUNENE

- 442 Palmer: on the mamane in great numbers / half-day's (Nov 1891) ROTW00
horse ride above Honaunau up Mauna Loa to above 9000
ft.
- 443 many / southeast section of the (Honaunau) Forest 4250 2 Mar 1944 BALP69
Reserve -4800
ft.el.
- 444 NPS: seen / Hapu Camp to Lumiawai waterhole... 29 Feb to (7)
McCandless Ranch 4 Mar 1944
- 445 NPS: seen / Honaunau Forest Reserve...vicinity 4500 29 Feb to (7)
McCandless Ranch -5000 4 Mar 1944
ft.el.

Vestiaria coccinea - Hawai'i

Kona District

- 446 NPS: seen / Hapu Camp to Lumiawai waterhole... 29 Feb to (7)
McCandless Ranch 4 Mar 1944
- 447 Richards: noted, number unspecified (1300-1830 hours)/ 20 Nov 1950 (13)
McCandless Ranch, hike from about 1/2 mile past Hapu
Mountain House along truck trail to Keanapuakui, thence
to Kaunene, thence about 1/2 mile toward Komakawai, South
Kona District
- 448 Richards: rather plentiful, perhaps 30 seen (0730- 4550 21 Nov 1950 (13)
1800 hours) / McCandless Ranch, hike along truck trail -6250
from Hapu to Keanapaakai to Kaunene ft.el.
- 449 Richards: noted, number unspecified (0915 -1530 hours) 22 Nov 1950 (13)
/McCandless Ranch, hike from Hapu to Gaspar's Dairy along
east boundary Honaunau Forest Reserve, South Kona District

PUU POHAKULOA

- 450 Palmer: common / Honaunau dairy belonging to a Mr. (Nov 1891) ROTW00
Johnson...about 6,000 feet above the sea and some
twenty miles to the south of Pulehua

Ka'u District

UNSPECIFIED LOCALITY

- 451 Banko: C. M. and M. L. Walton collected 6 specimens / (ca.1902) (1)
(? Pahala, ? Naalehu)

Vestiaria coccinea - Hawai'i

Ka'u District (outside Hawaii Volcanoes National Park)

POHUE BAY

- | | | | |
|-----|---|------------|--------|
| 452 | heard lots...none around here last spring / in the forest along the road, Manuka Forest Reserve | 8 Sep 1949 | (15) |
| 453 | heard by not seen / Manuka State Park...above the camping and eating areas | 9 Nov 1969 | YUEH70 |

PUU O KEOKEO

- | | | | | |
|-----|--|-------------|-------------|---------|
| 454 | present / on hike through Kipuka Nene (Kahuku) | 6000 ft.el. | 16 Mar 1944 | BALP69 |
| 455 | Richards: plentiful (0745-1030 hours) / Kipuka Nene, 5800 ft. el.; Kipuka Akala (?), 5300 ft.; Kahuku-Ainapo trail | | 3 Nov 1950 | (13) |
| 456 | one called up after brief noon foray afield / along Kahuku-Ainapo road where the ohia forest came up to the road | | 27 Dec 1967 | DONW68b |
| 457 | three or four (detected) / Kahuku-Ainapo trail | | 27 Dec 1967 | ORER68 |

PAHALA

- | | | | |
|-----|---|-----------|-----|
| 458 | Banko: Henshaw collected 3 specimens / Pahala | 1897-1902 | (1) |
|-----|---|-----------|-----|

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

WOOD VALLEY

459 Banko: Henshaw collected 1 specimen / Kapapala, 1897-1902 (1)
Kau District

KILAUEA CRATER

460 Banko: Henshaw collected 4 specimens / Ohaika (houses) 1897-1902 (1)
Kau District

461 pair seen / spoiled forest of Ohia, Kopiko, and Koa, 16 Jun 1937 DONW47a
under which the undergrowth had been cleared by cattle
(near) high bank in the rear of Brown's Camp rear
pastures

462 Donaghho: heard 3 / along the Bridle Path north of 16 Jun 1937 (27)
Volcano House thence through Brown's Ranch to Puu
Oo trail

463 Donaghho: saw 48, heard 92 / from Kipuka Puaulu north 30 Jun 1937 (27)
into Brown's Ranch koa forest thence southeast to fence-
line and back via tanks and ranch house (7 miles)

464 found quite a few / as the ohia and other trees became 30 Jun 1937 DONW51a
more numerous...along Keauhou Ranch Forest Reserve fence

465 found numbers / dense forest of second growth Ohia, 30 Jun 1937 DONW51a
intermixed with large Ohia and Koa, along Keauhou Ranch
Forest Reserve fence (on hike from Kipuka Puaulu)

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

466	present / mixed forest (Keauhou Ranch, vicinity Bird Park)	30 Jun 1937	DONW51a
467	quite a number / (Keauhou Ranch, vicinity Bird Park)	30 Jun 1937	DONW51a
468	2 adults, 2 young seen / Kipuka Kaunaiu, toward 1881 flow	20 Jul 1937	DONW51b
469	one seen / clump of ohia and mamane near old stone wall, flanks of Mauna Loa above end of Peter Lee road	6000 ft.el. 9 Aug 1937	DONW51d
470	now numbers...not noticed on the first trips (in July) / Olaa Forest Reserve road from Keauhou Ranch house to Volcano House	26 Aug 1937	DONW51f
471	were met with in the Ohia stands / Keauhou Ranch north of Kipuka Ki	26 Aug 1937	DONW51f
472	number heard / along edge of koa rain forest beginning of Puu Oo trail, Keauhou Ranch to Mauna Kea	11 Sep 1937	DONW51f
473	seen and heard / along edge of koa rain forest beginning of Puu Oo trail, Keauhou Ranch to Mauna Kea, Kulani and Lalaau visible	11 Sep 1937	DONW51f
474	Baldwin: plentiful as seeds on a strawberry...more common than I had ever found them to be elsewhere / section of forest 2-hour horseback ride through Keauhou Ranch from Bird Park toward Keawewai (where arrived at noon)	10 Sep 1938	(15)

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

- | | | | |
|-----|---|-------------|---------|
| 475 | Baldwin: varied greatly in numbers from kipuka to kipuka, from none to many seen and heard (0930 - 1700 hours) / 10 mile walk north from Park boundary above Kipuka Ki through Kipuka Kehaki (Kekake) and adjacent country, Keauhou Ranch | 1 Jan 1939 | (15) |
| 476 | Baldwin: 1 heard / on field trip from Kipuka Ki uphill across aa lava in Keauhou Ranch and return | 19 Oct 1948 | (15) |
| 477 | Richards: very plentiful (1030-1800 hours) / Keauhou Ranch, on Old Koa Mill Road toward Kilauea Forest Reserve boundary on hike beginning an estimated two or more miles from Ranch headquarters | 29 Oct 1950 | (13) |
| 478 | 9 censused (Christmas Count) / Nobriga Ranch road | 1 Jan 1955 | ANON55 |
| 479 | 32 censused (Christmas Count) / Keauhou (Nobriga) Ranch road (8 hours on foot, 1/2 hour by car) | 31 Dec 1955 | ANON56a |

KULANI

- | | | | |
|-----|---|------------|---------|
| 480 | Donaghho: saw 7, heard 34 / from about 6700 feet Mauna Loa Trail down to Keawewai water tank and into koa forest, thence making a "C" and out again going South, thence down to Brown's Ranch | 2 Jul 1937 | (27) |
| 481 | present / edge of the forest...only 100 ft. away... Keawewai water tanks | 2 Jul 1937 | DONW51b |
| 482 | present / Koa kipukas in pastured area along hike from Keawewai to Kilauea | 2 Jul 1937 | DONW51b |

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

483	heard and seen frequently / scattered groves of Ohia and Koa...near Keauhou Ranch headquarters on hike from Keawewai	2 Jul 1937	DONW51a
484	present / in koa forest on hike from vicinity Keawewai water tanks to Kilauea	2 Jul 1937	DONW51a
485	heard / along Puu Oo trail just above Keawewai	12 Sep 1937	DONW51g
486	seen occasionally...no large numbers / from end of koa forest, along Puu Oo trail, past Keawewai toward Mauna Kea	12 Sep 1937	DONW51g
487	Baldwin: band of 3 or 4 and several others seen / Puu Kaipu	11 Sep 1938	(15)
488	Baldwin: saw several by 0630 hours / Keawewai cabin area	11 Sep 1938	(15)
489	Baldwin: found / Keawewai area	6 Aug 1941	(15)
490	Baldwin: present but not many / from 7000 to 7250 ft. el. on hike from end of Strip Road to 7500 ft. and across Keauhou to first kipuka, down to 7000 ft. and return along contour	22 Oct 1948	(15)
491	Baldwin: seen / in Ohia-Koa kipukas southwest of Keawewai area	6900 -7300 ft.el. 24 Oct 1948	(15)
492	Baldwin: found...the best place around here (for iiwi) /first Kipuka northeast of Hawaii National Park Boundary (on hike north from end of Mauna Loa truck trail to koa kipukas 1-2 miles west of Solomon's waterhole, Keauhou Ranch	24 Oct 1948	(15)

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

- | | | | |
|-----|---|-------------------------|---------------|
| 493 | Baldwin: present (with apapanes, amakihis, akepas, akiapolaaus and creepers in mixed flock) / in large... koa clumps in understory of <u>Naio</u> , <u>Metr.</u> , <u>Styphelia</u> (traversed on hike north from end of Strip Road to 7,500 ft. Keauhou Ranch to koa kipukas 1-2 miles west of Solomon's Waterhole, and return via 6850 ft. contour) | 24 Oct 1948 | (15) |
| 494 | Baldwin: present / hike along north base Kulani Cone | 10 May 1949 | (15) |
| 495 | Baldwin: present, collected specimen(s) / in hike through sparse <u>Metr.</u> forest from junction Kulani Prison road and 1942 lava flow up to Puu Oo trail and south to Solomon's Waterhole | 12 Sep 1949 | (15) |
| 496 | Banko: Baldwin collected 11 specimens / Kekekaniho Keauhou, Ka'u District | 5000
-7000
ft.el. | 1948/1949 (1) |
| 497 | Banko: Baldwin collected 22 specimens, Keauhou, Ka'u District | 4100
-7300
ft.el. | 1948/1949 (1) |
| 498 | Banko: Baldwin collected 4 specimens / Keauhou Ranch, Ka'u District | 5500
-6800
ft.el. | 1948/1949 (1) |
| 499 | Banko: Richards collected 1 specimen / Puu Laau, Upper Olaa Forest Reserve | 7350
ft.el. | 1950 (1) |
| 500 | common...aggregate numbers exceeded a hundred / (Keauhou Ranch) | (17-19 Jun 1960) | EISE61 |
| 501 | definitely abundant / Koa parkland...Keauhou Ranch behind the Park | 19 Jun (1960) | DUNW60 |

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

502	Banko: Brodkorb collected 1 specimen / Kulani	30 Apr 1964	(1)
503	common / forests bordering the Kulani Prison Road... downslope (from) approximately 5200 feet...for perhaps 2000 feet (elevation)	23 Jan 1966	BERA66
504	seen / Kulani Prison Camp...near guest cabin	28 May 1966	DONW66b
505	(noted) / on the lower slopes of Kulani	28 May 1966	DONW66b
506	saw 2 / Puu Laau area	(Oct 1966)	(5)
507	met with and studied / forest along edge of Stainback Highway and...base of Kulani Cone	24 Dec 1967	DONW68b
508	Berger: censused (0) / Transect 1, 200-acre IBP Study Plot, Kilauea Forest Reserve (0945-1200 hours)	11 Jan 1972	(23)
509	Berger: censused (0) / Transect 2, 200-acre IBP Study Plot, Kilauea Forest Reserve (1215-1325 hours)	11 Jan 1972	(23)
510	Berger: censused (0) / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (0923-1135 hours)	12 Jan 1972	(23)
511	Berger: censused (0) / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (1215-1320 hours)	12 Jan 1972	(23)
512	Berger: censused 6 / Transect 1, 200-acre IBP Study Plot, Kilauea Forest Reserve (1130-1400 hours)	6 Feb 1972	(23)
513	Berger: censused 5 / Transect 2, 200-acre IBP Study Plot, Kilauea Forest Reserve (1427-1618 hours)	6 Feb 1972	(23)

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

514	Berger: censused 4 / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (1000-1215 hours)	7 Feb 1972	(23)
515	Berger: censused 8 / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (1240-1430 hours)	7 Feb 1972	(23)
516	Berger: censused 6 / Transect 1, 200-acre IBP Study Plot, Kilauea Forest Reserve (0955-1225 hours)	14 Mar 1972	(23)
517	Berger: censused 8 / Transect 2, 200-acre IBP Study Plot, Kilauea Forest Reserve (1246-1400 hours)	14 Mar 1972	(23)
518	Berger: censused 12 / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (0930-1125 hours)	15 Mar 1972	(23)
519	Berger: censused 10 / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (1151-1350 hours)	15 Mar 1972	(23)
520	Berger: censused 13 / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (0910-1125 hours)	23 Apr 1972	(23)
521	Berger: censused 10 / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (1148-1325 hours)	23 Apr 1972	(23)
522	Berger: censused 5 / Transect 1, 200-acre IBP Study Plot, Kilauea Forest Reserve (1220-1410 hours)	20 May 1972	(23)
523	Berger: censused 2 / Transect 2, 200-acre IBP Study Plot, Kilauea Forest Reserve (1425-1535 hours)	20 May 1972	(23)
524	Berger: censused 4 / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (0950-1140 hours)	21 May 1972	(23)

Vestiaria coccinea - Hawai'i

Ka'u District

525	Berger: censused 1 / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (1225-1337 hours)	21 May 1972	(23)
526	Berger: censused (0) / Transect 4, 200-acre IBP Study Plot, Kilauea Forest Reserve (1015-1140 hours)	18 Jul 1972	(23)
527	Berger: censused (0): / Transect 3, 200-acre IBP Study Plot, Kilauea Forest Reserve (1203-1255 hours)	18 Jul 1972	(23)
528	Berger: censused 2 / Transect 1, 200-acre IBP Study Plot, Kilauea Forest Reserve (1315-1430 hours)	20 Jul 1972	(23)
529	Berger: censused 3 / Transect 2, 200-acre IBP Study Plot, Kilauea Forest Reserve (1445-1538 hours)	20 Jul 1972	(23)
530	107 censused / Kilauea Forest Reserve	30 Dec 1972	GAGW73
531	10 censused / Keauhou Ranch and Volcano Golf Course	30 Dec 1972	GAGW73
532	censused 35 / Kilauea Forest Reserve	30 Dec 1973	MULW74
533	censused 23 / Keauhou Ranch	30 Dec 1973	MULW74
533a	an estimated 42,000 individuals (with <u>H. sanguinea</u> far outnumbering <u>Vestiaria coccinea</u>) comprised the 1.5 hour flight / observation stations at 1,350 and 1,850 m (linear distance 7.6 km) along Puu Oo	26 Jul 1974	MACR80
534	censused 91 / Kilauea Forest Reserve	14 Dec 1974	MULW75
535	censused 188 / Keauhou Ranch	14 Dec 1974	MULW75

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

536	saw only a few (3 observers, 5 hours) / about 1 mile along boundary fence between Kilauea Forest Reserve and Keauhou Ranch, approximately 11 miles NW of Volcano	19 Aug 1975	PRAH77
537	one seen / Keauhou, near Keawewai	4 Oct 1975	DONW75
538	evident / Kilauea Forest Reserve near Keawewai	4 Oct 1975	DONW75
539	Conant: 128 birds per 40 ha, 100% occurrence frequency / monthly censuses, upper Keauhou Ranch (Transect 92)	Dec 1972-Jul 1973. Aug 1974-Mar 1975	(24)
540	Conant: 131 birds per 40 ha, 100% occurrence frequency / monthly censuses, Kilauea Forest Reserve (Transect 91)	Dec 1972-Jul 1973. Aug 1974-Mar 1975	(24)

Vestiaria coccinea - Hawai'i

Ka'u District (outside H.V.N.P.)

541	47 censused (Christmas Count) / Waiakea Forest Reserve Transect 27	2 Jan 1978	KATL78
542	178 censused (Christmas Count) / Kulani Project Transect 28 downslope	2 Jan 1978	KATL78
543	121 censused (Christmas Count) / Kulani Project Transect 28 upslope	2 Jan 1978	KATL78
544	131 censused (Christmas Count) / Keauhou Ranch Transect 29	2 Jan 1978	KATL78
545	31 censused (Christmas Count) / Keauhou Ranch Transect 30	2 Jan 1978	KATL78
546	8 censused (Christmas Count) / Kilauea Forest Reserve (Keauhou Ranch Transect 30)	2 Jan 1978	KATL78
547	6 censused (Christmas Count) / Keauhou Ranch Transect 31	2 Jan 1978	KATL78
548	6 censused (Christmas Count) / Kilauea Forest Reserve (Keauhou Ranch Transect 31)	2 Jan 1978	KATL78
549	93 censused (Christmas Count) / Keauhou Ranch	2 Jan 1978	KATL78
550	11 censused (Christmas Count) / Kilauea Forest Reserve Keauhou Ranch	2 Jan 1978	KATL78

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

PARKWIDE INFERENCE

- 551 Donaghho: found pretty commonly in some areas...rare or absent from others / (Hawaii National Park) Jun-Aug 1937 (27)
- 552 Dr. Jaggar: Iiwi's...have become diminished in numbers in the Park / Hawaii National Park 1 Jan 1939 (15)
- 553 common...doing well...though diminished in numbers / in the Park (1940) BALP41
- 554 determined from extensive series of repetitive counts that, in a hundred days of censusing, species could be expected to be recorded.../ twelve census plots in Hawaii National Park ranging 20 miles on the flanks of the volcanoes Kilauea and Mauna Loa (1940-1949) BALP53

				(Total Count-Days)
0 days in.....	Plot 1	Kipuka Keana Bihopa	2300 ft.	64
0 days in.....	Plot 2	Kipuka Nene No. 2	3000	73
0 days in.....	Plot 3	Kipuka Nene No. 3	3000	73
83 days in.....	Plot 4	Napau Lava trees	2850	23
92 days in.....	Plot 6	Kipuka Kulalio	5500	110
75 days in.....	Plot 7	Kipuka Puaulu	4050	92
43 days in.....	Plot 8	Twin Craters	3650	100
0 days in.....	Plot 10	Mauna Loa	7500	41
66 days in.....	Plot 12	Kipuka Kulalio	5900	53
0 days in.....	Plot 13	Ainahou Gate	3050	54
0 days in.....	Plot 17	Kalanaokuaiki Pali	3300	61
0 days in.....	Plot 18	Lua Manu	3650	66

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

- | | | | | |
|-----|--|--------------------------|-------------|--------|
| 555 | mass shifts in populations occur and...seasonal changes in the census values frequently correspond with movements within the populations / twelve census plots in Hawaii National Park ranging 20 miles on the flanks of the volcanoes Kilauea and Mauna Loa | 2300.
-7500
ft.el. | (1940-1949) | BALP53 |
| 556 | common / in the wet Ohia forest, especially when the trees (Ohia) are in bloom...Kipuka Puauulu and the vicinity of Thurston lava Tube are likely places | | (1961) | DUNW61 |
| 557 | common / in the wet Ohia forest (of Hawaii Volcanoes National Park)...Kipuka Puauulu and the vicinity of Thurston lava Tube are likely places | | (1958-1960) | VANC73 |

UNSPECIFIED LOCALITY

- | | | | | |
|-----|---|----------------|----------------------------|--------|
| 558 | Banko: Baldwin and Abbott collected 1 specimen / Hawaii Volcanoes National Park | 5500
ft.el. | 1948/1949 | (1) |
| 559 | a few observed / in the humid older woods of Hawaii National Park | | (17-19 Jun
1960) | EISE61 |
| 560 | seen / Hawaii National Park, unspecified localities | | 18-20 Apr
1964 | KINW64 |
| 561 | many heard / Hawaii National Park area | | 8 Nov 1969 | YUEH70 |
| 562 | Banko: censused 4 (Christmas Count) / Hawaii Volcanoes National Park | | 22-23 Dec
1970 | (4) |
| 563 | Banko: censused 3 (Christmas Count) / Hawaii Volcanoes National Park | | 31 Dec 1971,
1 Jan 1972 | (4) |

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

MULTIQUADRANGLE

- 564 rarely seen / in the lower sections of the Park except during the season when the Metrosideros polymorpha (Ohia-Lehua) is in bloom (1936) WILK36
- 565 Craddock: saw only about half as many iiwi (22)...as elepaio / (in Hawaii National Park) near Napau Crater ...in Bird Park...in two kipukas near Bird Park 12-30 Jun 1937 (28)
- 566 in fair numbers / Napau Crater area, Thurston Lava Tube area, Bird Park, Kipuka Ki, edge forests of Kipuka Kulalio (Hawaii National Park) (1940) BALP41
- 567 too numerous to count / Byron's Cliff trail (and Hilina Pali) 16 Sep 1952 ROCR52
- 568 censused 2 (Christmas Count) / Napau Crater trail, Old summer camp, Thurston Lava Tube, Halemaumau Road (4 hours on foot, 1 hour by car) 31 Dec 1955 ANON56a
- 569 27 seen in 10 trips...30 1/2 hours / Mauna Loa Strip 4000 Apr (2 trips), DUNW62
-6700 May (2 trips)
ft.el. Jun, Aug, Nov,
Dec (2 trips)
1960; Mar 1961
- 570 21 seen in 8 trips...21 1/2 hours / East Rim of Kilauea Crater, Kilauea Iki, upper Chain of Craters Road Area May, Oct (2 trips) 1959; DUNW62
Apr (2 trips),
Jun, Oct 1960;
Feb 1961

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

571 heard everywhere but not seen / Byron ledge at Halemaumau and Thurston's 10 Nov 1969 YUEH70

572 26 censused / Mauna Loa Strip Road 4000, 30 Dec 1972 GAGW73
-6600
ft.el.

PUU ULAULA

573 Donaghho: saw 1, heard 2 / Mauna Loa truck trail 6000 16 Jun 1937 (27)
-7000
ft.el.

574 2 seen / near Mauna Loa trailhead 24 Jun 1937 DONW47a

575 Donaghho: saw 7, heard 6 / up Mauna Loa trail through and above large kipuka from 5500 ft. elevation 24 Jun 1937 (27)

576 Baldwin: one heard / in the ohias on the edge of the lava flow...vicinity of Mauna Loa truck trail 6250 27 Nov 1938 (15)
ft.el.

577 Baldwin: present / in the koas, Mauna Loa truck trail 6250 27 Nov 1938 (15)
ft.el.

578 Baldwin: very few heard / vicinity of Mauna Loa truck trail 6200 6 Feb 1939 (15)
ft.el.

579 Baldwin: several / in the koa kipuka by the (Mauna Loa truck) road 6250 6 Feb 1939 (15)
ft.el.

580 NPS: flock of 12 seen / in a 5-acre blooming Mamane grove along the Mauna Loa trail 6400 17 Nov 1939 (7)
ft.el.

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

581	NPS: only 1 seen / in a 5-acre blooming Mamane grove along the Mauna Loa trail	6400 ft.el.	18 Nov 1939	(7)
582	Baldwin: found / in the tongue of Ohia forest in the kipuka just to the east of National Park boundary	7500 ft.el.	6 Aug 1941	(15)
583	occurrence sporadic at times / Plot 12 (Kipuka Kulalio)	5900 ft.el.	(1940-1949)	BALP53
584	summer decrease in population...failure to develop any regular and sustained rise during the rest of the year / Plot 12 (Kipuka Kulalio)	5900 ft.el.	(1940-1949)	BALP53
585	Ward: seen / end of Strip Road		18 Apr 1964	(5)
586	NPS: seen / Mauna Loa Strip Road	6500 ft.el.	5 Oct 1965	(16)
587	NPS: number seen / the end of the Mauna Loa Strip Road		5 Oct 1965	(7)
588	two seen / around bend (of road) adjacent to Three-Trees kipuka		8 Jun (1966)	DONW67a
589	Jacobi: heard one calling / Mauna Loa trail (1330 hours)	7500 ft.el.	17 Oct 1972	(10)
590	3 censused / Mauna Loa Trail	6600 -8000 ft.el.	30 Dec 1972	GAGW73
591	censused 0 / Mauna Loa Trail	6600 -8200 ft.el.	30 Dec 1973	MULW74

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

592	small numbers / sub-alpine scrub habitat (Hawaii Volcanoes National Park)	7000 -8000 ft.el.	data collected CONS75 monthly Mar 1972 to Jul 1973; Aug 1974 to Nov 1974	
593	censused 2 / Mauna Loa trail	6600 -8200 ft.el.	14 Dec 1974	MULW75
594	censused 5 / Mauna Loa Strip Road	4000 -6600 ft.el.	14 Dec 1974	MULW75
595	Conant: 13 birds per 40 ha, 54% occurrence frequency / monthly censused, sub-alpine scrub, HVNP (Transect 9)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)
596	Covant: (0) / eight censuses, treeline ecosystem, HVNP (Transect 12)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)
597	2 censused (Christmas Count) / Mauna Loa Trail	6600 -8200 ft.el.	2 Jan 1978	KATL78

KIPUKA PAKEKAKE

598	26 censused (Christmas Count) / Kipuka Kulalio on truck trail	5500 ft.el.	1 Jan 1955	ANON55
599	a substantial population...from November through July and a much diminished number from August to October...reverse...of the situation at plot 8...	5500 ft.el.	(1940-1949)	BALP53

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

pattern...repeated each of the 6 years...lowest...
abundance always occurred in August or September,
when...absent or...between .10 and .3 birds per acre /
Plot 6 (Kipuka Kulalio)

- 600 Baldwin: not seen or heard / on hike from Kipuka 6250 21 Jul 1941 (15)
Kulalio to west boundary 1881 flow, Hawaii National
Park ft.el.
- 601 Baldwin: saw and heard a number / near Koa clump off 5900 4 Feb 1939 (15)
Loa truck trail ft.el.
- 602 Baldwin: markedly increased / along walk west, south, 25 Nov 1938 (15)
and return to "Camp 5,500" near Mauna Loa truck trail,
Kipuka Kulalio (0910-1245 hours)
- 603 Conant: birds per 40 ha, 100% occurrence Dec 1972-Jul (24)
frequency / monthly censuses, upper mountain parkland, 1973, Aug 1974-
HVNP (Transect 7) Mar 1975

KILAUEA CRATER

- 604 Banko: Wilson collected 3 specimens / Kilauea 1887/1888 (1)
- 605 Perkins: seen / very long day's tramp up the 23 Jul (1894) (3)
mountain from Kilauea (Volcano House)
- 606 Perkins: very abundant / 1 1/2 - 2 miles of Volcano up to 1896 (17)
House (toward Mauna Loa) (written 19 Sep
1947)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

607	Banko: Walcott collected 6 specimens / Kilauea	1901	(1)
608	Banko: Seale collected 5 specimens / Kilauea	1901	(1)
609	seen on more than one occasion / Volcano House, Kilauea	(Oct 1902)	MCGR02
610	Donaghho: saw 4 / Kipuka Puaulu	14 Jun 1937	(27)
611	Craddock: saw 1 / Kipuka Puaulu (Bird Park)	14 Jun 1937	(29)
612	heard a few...saw 2 / Kipuka Puaulu	14 Jun 1937	DONW47a
613	pair seen / forest of Ohia and Mamane on an old lava flow...Mauna Loa Strip road	ca. 5000 ft.el.	18 Jun 1937 DONW47a
614	Donaghho: saw 2 / Mauna Loa slope (near truck trail)	18 Jun 1937	(27)
615	Craddock: saw 2 / Kipuka Puaulu (Bird Park)	20 Jun 1937	(29)
616	two seen / west end of Bird Park	20 Jun 1937	DONW47b
617	Craddock: saw 1 / Mauna Loa truck trail	24 Jun 1937	(29)
618	Craddock: saw 6 / Kipuka on the Mauna Loa truck trail	4500 -5000 ft.el.	24 Jun 1937 (29)
619	in increased numbers / Kipuka Puaulu	30 Jun 1937	DONW51a
620	Donaghho: saw 3, heard 12 / Kipuka Puaulu	30 Jun 1937	(27)
621	Craddock: saw 5 / Kipuka Puaulu	7 Jul 1937	(30)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

622	not rare / Kipuka Puaulu	7 Jul 1937	DONW51b
623	Donaghho: saw 4, heard 31 / Kipuka Puaulu, going clear around	7 Jul 1937	(27)
624	Donaghho: saw 25, heard 56 / Kipuka Puaulu, making a complete trip	8 Jul 1937	(27)
625	Craddock: saw 3 / Kipuka Puaulu	9 Jul 1937	(30)
626	Craddock: saw 1 / Mauna Loa slopes near Truck Trail	20 Jul 1937	(30)
627	present / kipuka of mixed Koa, Ohia and Mamane...on way from Kipuka Kaunaiu to Cache No. 2, Mauna Loa truck trail	20 Jul 1937	DONW51b
628	present / kipuka of mixed Koa, Ohia and Mamane...on way from Kipuka Kaunaiu to Cache No. 2, Mauna Loa truck trail	20 Jul 1937	DONW51b
629	Donaghho: invaded / Bird Park and many areas south of this locality	late Jul 1937	(27)
630	numerous...heard / horseback trip from corral above Kipuka Kii down Mauna Loa trail through koa, ohia, mamane, naio kipukas on rough lava	31 Jul 1937	DONW51c
631	Donaghho: suddenly appeared in small numbers / (about Kilauea volcano)	Jul 1937	(27)
632	Donaghho: saw 2 / Mauna Loa slope (near truck trail)	9 Aug 1937	(27)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

633	Donaghho: saw 1 / Mauna Loa slope (near truck trail)	9 Aug 1937	(27)
634	quite common still / Bird Park	19 Aug 1937	DONW51e
635	a few / at the ohia grove one enters after coming off the lava flow on the east...Kipuka Ki	20 Aug 1937	DONW51f
636	heard / stand of Ohia...along Mauna Loa trail... near giant Koa...above Kipuka Ki	26 Aug 1937	DONW51f
637	saw many...heard many others / stand of large Ohia trees near giant Koa along Mauna Loa trail above Kipuka Ki	26 Aug 1937	DONW51f
638	present / forest on a flow along Mauna Loa trail beyond pasture above giant Koa up from Kipuka Ki	26 Aug 1937	DONW51f
639	present / stand of mixed Koa, Aalii, Mamane, and Ohia near stone wall coming from corral above pasture up from giant Koa, along Mauna Loa trail above Kipuka Ki	26 Aug 1937	DONW51f
640	Donaghho: quite common / in the wet and semi-wet koa forests behind Bird Park and the Keauhou Ranch	Jun-Aug 1937	(27)
641	Donaghho: generally absent / about the Volcano (Kilauea)	Jun-Aug 1937	(27)
642	11 seen (Christmas Count) / 4 observers in one party, 10 miles on foot from Kipuka Puaulu through adjacent golf course to KMC, through Kilauea Iki Crater, excluding area between KMC and Kilauea Iki (0600-1300 hours)	18 Dec (1937)	BALH38

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

- 643 Baldwin: barrage of Iiwi notes...singing everywhere.. 5500 25 Nov 1938 (15)
abundantly...saw 3 in one tree and heard numbers more ft.el.
in nearby trees / throughout the inner border strip
and where the Mamane trees were blooming...Mauna Loa
truck trail, Kipuka Kulalio
- 644 6 seen (Christmas Count) / 5 observers in one party, 18 Dec (1938) BALH39
10 miles on foot from Kipuka Puaulu through adjacent
golf course to KMC through Kilauea Iki Crater, ex-
cluding area between KMC and Kilauea Iki
(0600-1230 hours)
- 645 Baldwin: one seen / Bird Park (0855 hours) 31 Dec 1938 (15)
- 646 Baldwin: hear fewer (1410 hours) / near old camp, 5500 4 Feb 1939 (15)
Mauna Loa truck trail ft.el.
- 647 Baldwin: have been singing all the while (1345-1425 5500 4 Feb 1939 (15)
hours) / near old campsite in kipuka, Mauna Loa truck ft.el.
trail
- 648 Baldwin: one seen, heard more / near old camp, Mauna 5500 4 Feb 1939 (15)
Loa truck trail ft.el.
- 649 Baldwin: many / Mauna Loa truck trail 5500 6 Feb 1939 (15)
ft.el.
- 650 NPS: 4 seen / above the horse corral (Hawaii National 28 Apr 1939 (7)
Park)
- 651 Baldwin: saw 2 / near old campsite, kipuka near 5500 4 Jul 1939 (15)
Moana Loa truck trail ft.el.

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

652	NPS: seen / Kipuka Ki, giant Koa, and along the truck trail		4 Jul 1939	(7)
653	15 seen (Christmas Count) / 4 observers together 8 miles, in 2 parties 2 miles on foot from Kipuka Puaulu through adjacent golf course to KMC through Kilauea Iki Crater, excluding area between KMC and Kilauea Iki (0600-1330 hours)		17 Dec (1939)	DONW40a
654	common / in the kipukas...Hawaii National Park	5500 ft.el.	May 1940	DONW40b
655	5 seen (Christmas Count) / 6 observers in 2 parties, party 1 (Kilauea Iki) 7 miles, 6 hours; party 2 (Kipuka Puaulu and Golf Course) 3 miles, 5 hours; total 10 miles (0530-1200 hours)		22 Dec (1940)	HATG41
656	NPS: (abundant) / Bird Park back area		Aug 1941	(7)
657	congregation of hundreds / Kipuka Ki, Hawaii National Park		May 1942	BALP44
658	irruption...air was a'twitter with hundreds / Kipuka Ki		May 1942	BALP44
659	counted four / three parallel trails...to cover a total of five acres...in Koa groves (probably Strip Road area, Hawaii National Park) slopes of Mauna Loa		(1943?)	BALP44
660	Baldwin: present / undisturbed fern forest Kilauea Forest Reserve near N rim Kilauea Crater	4025 ft.el.	4 Oct 1948	(15)
661	Banko: Baldwin collected one specimen / Kilauea	4025 ft.el.	1948/1949	(1)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

662	a small year-round, but not necessarily resident population...in mid summer the numbers present soar and remain high for 2 or 3 months...by September the numbers are down again...pattern is repeated each year with great regularity / Plot 7 (Kipuka Puauulu)	4050 ft.el.	(1940-1949)	BALP53
663	brief, mid-summer rise (in population) / Plot 7 (Kipuka Puauulu)	4050 ft.el.	(1940-1949)	BALP53
664	Richards: noted, 5 of 6 mentioned seen together / on hike from Kipuka Kulalio to Bird Park		14 Oct 1950	(13)
665	12 counted in one hour's time / vicinity staff cottages, Hawaii National Park		13 Sep 1952	ROCR52
666	17 counted / on bus tour conducted by Mr. Bennett of the Park staff (vicinity Kilauea Crater)		24 Sep 1952	ROCR52
667	50 censused (Christmas Count); 0630-1715 hours; 6 observers in 1 to 3 parties; 13 party hours on foot, 4 1/2 party hours by car; 66 total party miles (7 on foot, 59 by car) / Bird Park, Golf Course, Ainahou Road to Ruttles Farm, Thurston Lava Tube trail and portions of Kilauea Iki trail, Byron Ledge trail and portions of side trails, old CCC camp, Park Headquarters area, Wright Road to end.		1 Jan 1954	ANON54
668	59 seen (Christmas Count) / 11 observers in 5 parties; total party hours 23 (20 on foot, 3 by		1 Jan (1955)	BOTI55

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

car); total party miles 45 (16 on foot, 29 by car) Hilina Pali road, Napau Crater trail to Pulu factory, Twin Craters, Golf Course, Nobriga Ranch road, Bird Park, Mauna Loa truck trail to 5500 ft. elevation (0600-1500 hours)

669	20 censused (Christmas Count) / Bird Park	1 Jan 1955	ANON55
670	8 censused (Christmas Count) / Mauna Loa road to 5500 ft. elevation and Kipuka Kulalio (4 hours on foot, 1 1/2 hours by car)	31 Dec 1955	ANON56a
671	14 censused (Christmas Count) / Bird Park, and walk to KMC via golf course (6 hours on foot)	31 Dec 1955	ANON56a
672	one observed / Bird Park	4 May 1957	CURA58
673	seen / around the Volcano House	(Apr 1960)	SAYD60
674	fewer compared with apapane / Bird Park	Jun 1960	MENM62
675	NPS: three or more seen continually / Park Residence	Sep-Nov 1960	(16)
676	observed / Bird Park	Easter Vacation (1960)	HANC60a
677	NPS: more around...than ever observed before / Kilauea Crater area	Sep-Nov 1960	(16)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

678	58 seen in 9 trips...13 1/4 hours / Kipuka Puaulu, Kipuka Ki		Sep, Oct 1959; DUNW62 Apr (3 trips), May, Aug 1960; Feb, Dec 1961	
679	pair feeding a green young / Mauna Loa Strip road	ca. 5600 ft.el.	Feb 1962	CURH63
680	saw several / Mauna Loa Strip road...in blooming mamane trees		21 Apr to 2 May 1967	HATG67
681	Morrison: saw between 50-75 / Mauna Loa Strip road area		May 1967	HATG67
682	present / Mauna Loa Strip road		25 Dec 1967	DONW68b
683	at least four / Mauna Loa Strip road		26 Dec 1967	ORER68
684	Banko: G. Balaz: reported seeing one...the first since arriving in May / Superintendents' residence		18 Oct 1970	(4)
685	Banko: 2 censused (Christmas Count) 0625-0725 hours / Kipuka Puaulu		22 Dec 1970	(4)
686	Banko: 1 censused (Christmas Count) 0725-0838 hours / trail from Kipuka Puaulu to KMC		22 Dec 1970	(4)
687	seen / Volcano House...trail down into the caldera		3-6 May (1971)	SMIS71
688	Banko: 2 censused (Christmas Count) 0650-0740 hours / Kipuka Puaulu		31 Dec 1971	(4)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

689	6 censused / Bird Park		30 Dec 1972	GAGW73
690	9 censused / Mauna Loa Strip road	4000 -6000 ft.el.	30 Dec 1973	MULW74
691	1 censused / Bird Park		30 Dec 1973	MULW74
692	0 censused / rim of Kilauea Crater		30 Dec 1973	MULW74
693	Banko: unspecified collector obtained one specimen / Kipuka Kulalio, Hawaii Volcanoes National Park		22 Aug 1974	(1)
694	censused 4 / Bird Park		14 Dec 1974	MULW75
695	censused 0 / rim of Kilauea Crater		14 Dec 1974	MULW75
696	saw 2 / Mauna Loa Strip road	5500 ft.el.	13 Sep 1975	KATL75
697	Conant: 15 birds per 40 ha, 69% occurrence frequency / monthly censuses, Kipuka Ki, HVNP - Keauhou Ranch (Transect 4)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)
698	Conant: 40 birds per 40 ha, 77% occurrence frequency / monthly censuses, Kipuka Puaulu, HVNP (Transect 16)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)
699	Conant: (0) / seven censuses, Tree Molds, HVNP (Transect 3)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)
700	Conant: 28 birds per 40 ha, 92% occurrence frequency / monthly censuses, lower mountain parkland, HVNP (Transect 5)		Dec 1972-Jul 1973, Aug 1974- Mar 1975	(24)

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

701	0 censused (Christmas Count) / Mauna Loa road	4000 -6600 ft.el.	2 Jan 1978	KATL78
702	1 censused (Christmas Count) / Kipuka Puaulu and adjacent areas, HVNP		2 Jan 1978	KATL78
703	2 censused (Christmas Count) / rim of Kilauea Crater		2 Jan 1978	KATL78

VOLCANO

704	surprised to hear one / around (CCC) camp (near Kilauea Iki)		19 Jul 1937	DONW51b
705	still about / (CCC) camp (near Kilauea Iki)		10 Aug 1937	DONW51d
706	have disappeared lately / (CCC) camp (near Kilauea Iki)		15 Aug 1937	DONW51e
707	pair seen / near twin craters, vicinity of Kilauea Iki		20 Aug 1937	DONW51f
708	notably common / near Byron's Ledge and Kilauea Iki		20 Aug 1937	DONW51f
709	Donaghho: saw 2 / Kilauea Iki		Sep ? 1937	(27)
710	unsuccessful search...supposed to be rather numerous in that area / Thurston Lava Tube		(Feb 1947)	GRIP47
711	totally absent...from January to July with one exceptional occurrence in March 1941...rise (in population) in late summer and autumn repeated each year without exception / Plot 8 (Twin Craters and vicinity)	3650 ft.el.	(1940-1949)	BALP53

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

712	22 counted / Kilauea Iki trail	17 Sep 1952	ROCR52
713	found a few / Thurston Lava Tube	(April 1960)	HINL60
714	unsuccessful search / Thurston Lava Tube	Feb 1962	CURH63
715	NPS: five seen at one time in mamane tree / Thurston Lava Tube	1 Nov 1962	(16)
716	one seen / Thurston Lava Tube	8 Nov 1969	YUEH70
717	Banko: 1 censused (Christmas Count) 0635 -0910 hours / Thurston Lava Tube to Byron Ledge, return via Kilauea Iki rim trail	23 Dec 1970	(4)
718	Pratt: present, Thurston Lava Tube	(Jan 1971)	(18)
719	Banko: 1 censused (Christmas Count) 0645-0915 hours / Thurston Lava Tube to Byron Ledge, return via Kilauea Iki rim trail	1 Jan 1972	(4)
720	Berger: fairly common during the breeding season / Thurston Lava Tube region	(1970-1972?)	(25)
721	Conant: 16 birds per 40 ha, 31% occurrence frequency / monthly censuses, Thurston Lava Tube, HVNP (Transect 1)	Dec 1972-Jul 1973, Aug 1974-Mar 1975	(24)

KAU DESERT

722	several seen, all immatures / in ohia kipukas on slopes of Mauna Iki	4 Aug 1937	DONW51d
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Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

723	one seen and heard / in Park forest on hike from southernmost cone southeast rift Kilauea to Kau-Hilo road	4 Aug 1937	DONW51d
724	one seen in company with several immature apapane / along trail to Mauna Iki	4 Aug 1937	DONW51d
725	Donaghho: saw 1 / Mauna Iki	Aug ? 1937	(27)
726	absent / Plots 1, 2, 3 Kipuka Keana Bihopa 2300 ft.; el. Kipuka Nene 3000 ft. el.; Kipuka Nene 3000 ft. el.	(1940-1949)	BALP53
727	one censused (Christmas Count) / Hilina Pali road	1 Jan 1955	ANON55
728	Conant: (0) / monthly censuses, Kipuka Keana Bihopa, HVNP (Transect 88)	Dec 1972-Jul 1973, Aug 1974 Mar 1975	(24)

MAKAOPUHI CRATER

729	Craddock: saw 12 / Kalapana trail to fence, along fence to Napau Crater and back trail to road	23 Jun 1937	(29)
730	Donaghho: heard 5, saw 2 / down Kalapana trail along Park fence line and up to Napau Crater trail	23 June 1937	(27)
731	noted several, saw 2 / Ohia forest with trees around 40 ft. in height...south of trail to Napau Crater	23 Jun 1937	DONW47b
732	one heard / descending Makaopuhi Crater from Kane Nui O Hamo	25 Jun 1937	DONW51a

Vestiaria coccinea - Hawai'i

Hawaii Volcanoes National Park

- 733 Baldwin: saw several, heard about 8 or more...first positive record I have obtained below 4,000 ft. in the Park / along trail north of the 1840 Lava Flow (Lava Trees), north of Napau Crater 3 Aug 1939 (15)
- 734 Baldwin: heard notes at various places that could hardly have been anything else (not seen) / northeast of Napau Crater 16 Jul 1941 (15)
- 735 population...remains at a relatively constant and low level throughout the year / Plot 4 (Napau Lava trees) 2850 ft.el. (1940-1949) BALP53
- 736 Richards: none seen / along trail (from Makaopuhi Crater) to Napau Crater, Lava Trees, and return 19 Aug 1950 (13)
- 737 3 censused (Christmas Count) / Napau Crater trail to Pulu factory 1 Jan 1955 ANON55
- 738 two seen in 4 trips...14 3/4 hours / (along trail) between Makaopuhi and Napau Craters Jul 1959; Apr (2 trips), Oct 1960 DUNW62
- 739 Berger: present / trip to Napau Crater 22 Jan 1966 (25)

KALAPANA

- 740 Conant: none observed during systematic surveys... feel that they occur but were not observed due to very low numbers / Kalapana Extension, HVNP 1976-1977 (31)

Vestiaria coccinea - Hawai'i

Kilauea District (outside Hawaii Volcanoes National Park)

UNSPECIFIED LOCALITY

741	Richards: good observations...on two / on Stainback Highway from 9000 ft. (Hut) to intersection Flume Road	19 Aug 1950	(13)
742	many seen / Olaa Tract (NPS)	17 Jun (1960)	DUNW60
743	several seen / Stainback Highway	25 Dec 1967	OPER68
744	90 censused / Kulani Cone to Puu Makaala	30 Dec 1972	GAGW73
745	censused 1 / Olaa Tract	14 Dec 1974	MULW75
746	98 censused (Christmas Count) / Olaa Tract, NPS	2 Jan 1978	KATL78

MULTIQUADRANGLE

747	67 seen in 6 trips...16 3/4 hours / Olaa Tract (from Wright Road)	Oct, Nov 1959; May, Jun, Jul 1960; Apr 1961	DUNW62
748	Jacobi and Warshauer: not recorded / in surveys covering open <u>Metrosideros</u> forest in the Small Tract Section, <u>Cibotium</u> forest beyond the end of Olaa Back Road, or in <u>A. koa</u> forest in Large Tract Section, Olaa Tract (NPS)	Jan 1974 to Jan 1975 (23 days)	(32)
749	Jacobi and Warshauer: rare (only sighted once or twice during the entire survey / in <u>Cibotium</u> forest along trail to the koa forest, Olaa Tract (NPS)	Jan 1974 to Jan 1975 (23 days)	(32)

Vestiaria coccinea - Hawai'i

Kilauea District (outside H.V.N.P.)

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|-----|---|--------------------------------------|------|
| 750 | Jacobi and Warshauer: occasional (at least five birds consistently found over the total survey time in a particular forest type, however often in numbers of less than five per day) / in closed <u>Metrosideros</u> forest in from the Volcano Ag. Exp. Station and in open <u>Metrosideros</u> forest beyond the end of Wright Road, Olaa Tract (NPS) | Jan 1974 to
Jan 1975
(23 days) | (32) |
|-----|---|--------------------------------------|------|

VOLCANO

- | | | | |
|-----|---|--------------------------|---------|
| 751 | Banko: Henshaw collected 3 specimens / Volcano | 1897-1902 | (1) |
| 752 | a few / along first several miles of Kulani Cone trail from Volcano area | 13 Jul 1937 | DONW51b |
| 753 | Baldwin: ?Iiwi heard...one seen shortly after / (1415 hours) near 3-mile mark Kulani Cone trail | 24 Nov 1938 | (15) |
| 754 | Baldwin: one or two seen / near Kulani Cone trailhead | 29 Dec 1938 | (15) |
| 755 | Baldwin: one seen and heard / one-mile marker, Kulani District | 8 Feb 1939 | (15) |
| 756 | Banko: Baldwin collected 1 specimen / Kahaualea, Puna District | 2800
ft.el. 1948/1949 | (1) |
| 757 | Richards: saw two (0900-1645 hours) / at 2400 ft. el. by altimeter on hike about 4 3/4 miles SSW along Charles Tong trail and return, beginning about 1/2 mile from Belt Highway near end of Olaa Forest Park Reserve, 2500 ft. el., 24 miles from Hilo | 20 Sep 1950 | (13) |

Vestiaria coccinea - Hawai'i

Kilauea District (outside H.V.N.P.)

- 758 Richards: many heard...25-50?... (1130-1830 hours) / 3400 12 Oct 1950 (13)
2 1/2 mile hike along trail from end of Haunani -3700
Street, Volcano, to Puu Kulani, Upper Olaa Forest ft.el.
Reserve
- 759 Richards: noted, number unspecified (1000-1830 3800 13 Oct 1950 (13)
hours hike to just past 4 mile marker on trail from -4200
end of Haunani Street, Volcano, to Puu Kulani, Upper ft.el.
Olaa Forest Reserve
- 760 Richards: noted, number unspecified (1130-1800 3900 15 Oct 1950 (13)
hours) / hike for approximately 1 1/2 miles along -4000
trail to Puu Kulani from end of Haunani Street, Volcano ft.el.
- 761 Richards: noted, number unspecified (1400-1830 3900 1 Nov 1950 (13)
hours) / about 1 1/2 mile hike along trail to Puu -4000
Kulani from end of haunani Street, Volcano ft.el.
- 762 Richards: noted, number unspecified (1300-1745 14 Jan 1951 (13)
hours) / hike about 1 1/2 miles up trail to Puu Kulani
from end of Haunani Street, Volcano
- 763 Richards: noted, number unspecified (0900-1700 17 Jan 1951 (13)
hours) / hike to 2 mile marker on trail to Puu Kulani
from end of Haunani Street, Volcano
- 764 15 censused (Christmas Count) / Wright Road (1/2 31 Dec 1955 ANON56a
hour on foot, 1/2 hour by car)
- 765 seems to have increased over the winter population... summer (1956) ANON56b
adults and immatures seen about residence and at end
of Wright Road / Volcano area

Vestiaria coccinea - Hawai'i

Kilauea District (outside H.V.N.P.)

766	van Riper: one observed (1630-1730 hours) walking survey / Wright Road, Volcano	27 Feb 1971	(12)
767	4 censused / Wright Road and Upper Olaa Forest Reserve	30 Dec 1972	GAGW73
768	seen several times in the yard...heard daily / (Volcano residence)	(19 Oct 1973)	MULM74
769	censused 2 / Volcano, Wright Road, Upper Olaa Forest Reserve	30 Dec 1973	MULW74
770	censused 4 / Volcano community	14 Dec 1974	MULW75
771	censused 4 (Christmas Count) / Volcano community	2 Jan 1978	KATL78

PUU MAKAAALA

772	NPS: seen / hike...to an unmapped cinder cone below Kulani cone (vicinity Mt. View flume road)	3700 ft.el.	(Apr 1945)	(7)
773	Baldwin: present / found lower (on the Mt. View flume road) than...before, but still pretty far up		12 Sep 1949	(15)
774	censused 91 / Kulani Road and Puu Makaala		30 Dec 1973	MULW74
775	censused 129 / Kulani Road and Puu Makaala		14 Dec 1974	MULW75
776	censused 113 (Christmas Count) / Stainback Highway and Puu Makaala		2 Jan 1978	KATL78

Vestiaria coccinea - Hawai'i

Kilauea District (outside H.V.N.P.)

MOUNTAIN VIEW

777	Banko: Wilson collected 3 specimens / Olaa	1887/1888	(1)
778	Banko: Arnold collected 1 specimen / Keaau	1898	(1)
779	Banko: Arnold collected 1 specimen / Olaa	1898	(1)
780	Banko: Hitchcock collected 1 specimen / Olaa	1900	(1)
781	Banko: Henshaw collected 1 specimen / Olaa	2400 ft.el. 1898 to 1902	(1)
782	Banko: Henshaw collected 37 specimens / Olaa	1897 to 1902	(1)
783	Banko: H. Shipman, resident of Hilo area since 1892, never saw iiwi / as far down from upper forests as Keaau	(ca. 1900 to 1970)	(4)

Mauna Kea District

UNSPECIFIED LOCALITY

784	seen / Saddle Road	(27 Mar 1960)	ANON60
785	795 don't think I have seen so many / Saddle Road	16-23 Nov 1966	ORDW67
786	in such great numbers...where (banana poka) is abundant...it was hard to distinguish the presence of any other species of bird / Nauhi (?)...eastern slope of Mauna Kea	27 Jun 1971	VANC73

Vestiaria coccinea - Hawai'i

Kilauea District (outside H.V.N.P.)

MULTIQUADRANGLE

- 787 present / in the Ohia forest (Mauna Kea below 5000 ft. el.) May 1940 DONW40b
- 788 two seen / just above Puu Mali...on hike from Halepohaku to Puu Laau, Mauna Kea 8000 -9000 ft.el. 24 Jan 1968 WALR68
- 789 van Riper: 5 observed (1000-1400 hours) walking survey / Pohakuloa and up on Saddle Road 19 Jan 1971 (12)
- 790 in over 4 years of work in this area I have seen only...two...appear to be merely passing through / dry mamane-naio forest on Mauna Kea (1973) VANC73
- 791 absence from recorded species list surprising...State wildlife biologists confirm presence, particularly when mamane trees are in bloom...have seen iiwi at several locations in areas surrounding P.T.A., in both mamane and ohia forest...extended drought and poor flowering probably responsible for absence during this survey...doubtful that any were missed on transects / U. S. Army Pohakuloa Training Area late Nov 1976 to Jan 1977 SHAR77

HILO

- 792 3 specimens obtained / within 8 miles of Hilo Aug 1875 SCLP81
(? towards Keaau)

Vestiaria coccinea - Hawai'i

Mauna Kea District

793 Banko: Challenger Expedition member(s) collected 3 specimens / within 8 miles of Hilo (? toward Keaau) Aug 1875 (1)

PIIHONUA

794 Palmer: many seen near camp / 4-5 hour hike up Wailuku River from Hilo 12 Apr 1892 ROTW00

795 Palmer: pretty numerous / 6 hours 45 minutes hike out of Hilo headed for palm region 13 Apr 1892 ROTW00

796 Banko: Henshaw collected 4 specimens / Kaumana 1897 to 1902 (1)

797 Baldwin: one seen / near Kapehu Stream...Hilo Forest Reserve...above Hilo 2000 -2350 ft.el. 11 Sep 1941 (15)

798 Baldwin: heard about a dozen times...been here for 40 minutes / just south of Kapehu Stream...Hilo Forest Reserve...above Hilo 2000 ft.el. 11 Sep 1941 (15)

799 Baldwin: none present / west of Kapehu Stream...Hilo Forest Reserve...above Hilo 2350 ft.el. 11 Sep 1941 (15)

UPPER PIIHONUA

800 Baldwin: possibly heard / 8 miles above Kaumana flume...along Saddle Road ca. 4000 ft.el. 13 Nov 1942 (15)

801 found substantial numbers / on the Saddle Road 4000 -6000 ft.el. (23 Mar to 14 Apr 1958) EASW58

Vestiaria coccinea - Hawai'i

Mauna Kea District

802	seen and heard / Saddle Road, 15 mile marker from Hilo		mid-Aug 1958	BALH58
803	watched an Iiwi / along the Saddle Road	4000 ft.el.	29 Jan 1968	BERA72
804	van Riper: 32 observed (1300-1515 hours) walking survey / upper Wailuku River, Mauna Kea		6 Feb 1971	(12)
805	van Riper: 3 observed (1630-1700 hours) walking survey / rain forest along Saddle Road	4000 ft.el.	28 Feb 1971	(12)

Puu Oo

806	said to be abundant / above Kalaieha sheep station		(1887-1888)	WILS90b
807	reported abundant at certain seasons of the year / above Kalicha (Kalaieha), a sheep station	6000+ ft.el.	(1887-1888)	WILS90a
808	Baldwin: third most abundant species (after apapane, amakihi), including elepaio seen / 2 mile hike south of Saddle Road toward 1880 flow	ca. 5700 ft.el.	13 Nov 1942	(15)
809	Baldwin: third most abundant species seen (after apapane, amakihi), including elepaio / on about 3-4 mile hike through ohia and koa kipukas on Puu Oo Ranch beginning at 5600 ft. on Saddle Road	5400 -6000 ft.el.	13 Nov 1942	(15)
810	Baldwin: found several / small kipuka along Saddle Road nearly 10 miles above Kaumana flume		13 Nov 1942	(15)

Vestiaria coccinea - Hawai'i

Mauna Kea District

- | | | | |
|-----|---|-----------------------------|------|
| 811 | Baldwin: my impression...more numerous than in Hawaii National Park / Puu Oo Ranch, land of Humuula | (written 21 Nov 1942) | (15) |
| 812 | Banko: Baldwin collected 1 specimen / Humuula, North Hilo District | 4500 ft.el. 1948/1949 | (1) |
| 813 | Banko: Baldwin collected 2 specimens / Puu Oo - Volcano trail, Humuulu, North Hilo District | 5924 ft.el. 1948/1949 | (1) |
| 814 | Banko: Baldwin collected 3 specimens / Puu Oo - Volcano trail, Waiakea | 5773 -5900 ft.el. 1948/1949 | (1) |
| 815 | Richards: saw possibly six, and heard perhaps eight ...two collected / hike 250 yards down Puu Oo trail toward Mauna Loa from where it crosses Saddle Road | 15 Aug 1950 | (13) |
| 816 | Richards: common...six or eight seen / 3 mile hike along Puu Oo trail from junction 1942 flow | 18 Aug 1950 | (13) |
| 817 | Richards: about 12...were seen and possibly 20 heard / on 1/4 mile hike through kipuka, Puu Oo Ranch, 20 miles from Hilo | 18 Sep 1950 | (13) |
| 818 | Richards: noted, number unspecified (1300-1815 hours) 27 Oct; (0745-1215 hours) 28 Oct / Puu Oo trail, south from Saddle Road 2 miles 27 Oct, 1 1/2 miles 28 Oct. | 27, 28 Oct 1950 | (13) |
| 819 | van Riper: two seen, 5 hours intermittent walking survey / Saddle Road, 19 miles above Hilo | 19 Jan 1971 | (12) |

Vestiaria coccinea - Hawai'i

Mauna Kea District

820 many found / kipuka on Saddle Road 5800 (5 Feb 1978) PYLR78
ft.el.

PUU KOLI

821 Baldwin: none / Puu Koli and green kipukas above... 7341 17 Apr 1943 (15)
north flank Mauna Loa ft.el.

AHUMOA

822 Baldwin: saw none / on hike about four or five 19 Apr 1943 (15)
miles NW Puu Laau, Mauna Kea

823 Baldwin: none seen on 0800-1130 hour hike / Puu 20 Apr 1943 (15)
Laau forest, NW of Forest Service cabin, Mauna Kea
Forest Reserve

824 Richards: plentiful...estimate 70-80 seen, one 7100 7 Oct 1950 (13)
family observed...4-5 juvenales seen / west of
Puu Laau, Mauna Kea -7350
ft.el.

825 occasionally present / Puu Ahumoa, Mauna Kea (1956) BALH56

826 Ward: none seen on brief visit...stopped every 17 Apr 1964 (5)
quarter of a mile or so to look and listen / (Puu
Laau vicinity)

Vestiaria coccinea - Hawai'i

Mauna Kea District

MAUNA KEA

827 pair seen / mamane forest up from Puu Loa in Mauna Kea Forest Reserve 14 Sep 1937 DONW51g

PUU AKALA

828 numerous / in the trees above Kanakaleonui (ca. Jul 1962) WALR62

829 all over...great numbers / in koa forest...about two hundred yards beyond Hopuwai outcamp...Huumula Sheep Station...Mauna Kea 30 May 1966 DONW66b

AKAKA FALLS

830 Banko: Walcott collected 1 specimen / Kaiwiki 1901 (1)

831 Banko: Henshaw collected 13 specimens / Kaiwiki 1897 to 1902 (1)

KEANAKOLU

832 Miller: collected one / in Ohia and Koa forest, vicinity Chester Blacow's Ranch, above Laupahoehoe about 10 miles 800 ft.el. 23 Dec 1902 (11)

833 Miller: heard a male in full song / the section of country called Paradise (Chester Blacow's Ranch area) 31 Dec 1902 (11)

Vestiaria coccinea - Hawai'i

Mauna Kea District

834 Banko: Henshaw collected 3 specimens / Kuaia 1897-1902 (1)
(near Laupahoehoe)

UMIKOA

835 Banko: Blacow collected 9 specimens / Horner's 4000 (3) ft.el. 1903 (1)
Ranch (Umikoa) 1600 (2) ft.el.
8000 (4) ft.el.

836 Donaghho: E. Y. Hosaka reported invasion / on the spring of 1937 (27)
east slope of Mauna Kea above Kukaiau Ranch

HONOKAA

837 Banko: Miller collected 1 specimen / Paauilo 1902 (1)

838 Banko: Blacow collected 1 specimen / Paauilo 1903 (1)

ABSTRACT

Drepanis funerea, or 'Ō'ōnukuumu, is a medium sized black forest bird with long curved bill. Endemic to the island of Moloka'i it formerly ranged upper elevation forests in the central and eastern sectors of the island. Exhaustive search of literature and field journals uncovered only 39 reports, collection records and related statements on its population status and/or geographical distribution from 1893 to 1978. Ten specimens are known. Only scattered unsubstantiated rumors of its existence after 1907, when the last specimens were collected, are known. The 'Ō'ōnukuumu is apparently extinct.

52. Drepanis funerea

'Ō'ōnukuumu

Endemic to the island of Moloka'i, the 'Ō'ōnukuumu is a medium-sized (ca. 8 inch long) black forest bird with long curved bill (Rothschild 1900). Not found by S. B. Wilson in 1888 nor by H. C. Palmer in 1892 and 1893, this species was first collected by R. C. L. Perkins in 1893 and described by A. Newton (1893).

Numbers and principal repositories of ten known specimens are as follows: Bernice P. Bishop Museum (4), British Museum of Natural History (3, inc. co-type), American Museum of Natural History (2) and Museum of Comparative Zoology, Harvard University (1).

In the following historical account, one or two digit numbers in parenthesis refer to specific records in the Appendix. Sources cited in the Appendix may be traced to complete references in the bibliography.

Perkins (field journal) recorded shooting, though not necessarily retrieving, a total of 12 'Ō'ōnukuumu on the following dates in 1893: 18 June (2); 21, 25, 27 June (3); 9 July, 12 September (2); and 13 September (2). Six of these specimens were collected in "high" or "highest" forest above Makakupa'ia, four were taken along the Pelekunu divide, and two were obtained in an unspecified locality (13-17, 20, 21). On 10 July 1893 Perkins (field journal) "heard none" in "highest forest above Makakupaia", but logged one sighted (but not shot) in the same area on 11 July (18, 19). 'Ō'ōnukuumu, other than those collected, were noted in Perkins' journal on the following dates: 25 June (1), 27 June (1), 9 or 11 July (1). The bird shot for a specimen on 21 June was recorded as "lost". Of the June period Perkins (field journal) wrote that this species was "seen on nearly each occasion: in the "several visits...to the best localities" (10). Wilson and Evans (1894) state that Perkins obtained his specimens in June 1893 at an elevation of 5000 ft. (7).

Apparently only five specimens taken by Perkins in 1893 survive to the present day (Banko 1979 report). Labels from two taken in June are marked 4000+ and 5000 ft. elevation, two dated 13 September are unrecorded as to locality and one undated specimen, presumably obtained by Perkins, is without any data (4, 5, 8). Perkins also secured one specimen in June 1896 at an altitude of 4000 ft. elevation in an unspecified locality (6).

In his published account, Perkins (1903) added, "On one occasion when not prepared to collect birds I saw seven individuals in a single day, but this was quite exceptional,

and when wanting a specimen I have spent a whole day or several days in its haunts, and in exclusive search for it, without seeing even a single one, and this at a time when I had become perfectly familiar with its habits" (10a). Munro (1944b) quotes Perkins as stating that he (Perkins) found this species "totally absent from the places where I got them...in 1893" when he returned in 1902 (11). Perkins (1903) termed the 'Ō'ōnukuumu "one of the rarer island birds and now confined to the higher parts of the forest on Moloka'i where the ground is soft and boggy" (1).

Bryan (1908) visited Moloka'i from 15 April to 15 June 1907 for the purpose of collecting birds, the 'Ō'ōnukuumu being one of his target species. He relates that T. Meyer secured six specimens in six months of more or less continuous collecting in the forests at the head of Pelekunu Valley in 1894, but in hunting in another area Bryan (1908) "found none in 10 days search in a section probably never before hunted over, or perhaps never even visited by white men...in the Halawa mountains" (23, 32). He also found none "after 3 weeks search" on the southwest side of Hanalilolilo mountain on the edge of the great bog forest at the head of Waikolu and Pelekunu Valleys (25). In the same general area Bryan (1908) states that he collected two specimens "well up" along the ridge between Waialua and Honouliwai streams from his camp at the head of Waialua Valley (34). Labels on three specimens obtained by Bryan show that one was taken 4 June 1907 at the headwaters of "Honoosleuwai" (Honoulu Wai), one in "June 1907" at Moanui, and one on 7 June 1907 at the head of Moanui Valley (Banko 1979 report) (35-37). Bryan (1908) added that none of this species was found by (G. C.) Munro "who spent 4 weeks looking in the forests at the head of Pelekunu Valley" (24). In commenting later on his 1907 search, Munro (1944a) added that "neither Alanson Bryan nor I could find any" in the district above Pelekunu Valley where Perkins had collected (26). Munro (1944a) acknowledged that Perkins had collected a series of skins above Pelekunu Valley, stated that "private collectors later depleted the district" (22), and added that Bryan had secured three male specimens at Moanui "farther around the island to the east" (38).

The collection of a specimen at the head of Moanui Valley on 7 June 1907 seems to be the last verifiable record of the 'Ō'ōnukuumu in the wild. Munro (1944a, 1963) wrote that none were seen on his bird survey in 1936 which included both east and west sides of the island, but acknowledged a report that one had been seen a few years before in the Wailau Valley (12, 27).

Donaghho (1963) stated that this species was reported in 1936 by workmen camping in the forests high on Oloku'i, saying that this species is "not easily confused with others", and that he "takes stock" (28). Earlier, Donaghho (1954) recorded that he had received a report of this species on Oloku'i

saying that this species was difficult to confuse with anything else, but failed to mention details of date and locality (29).

Pekelo (1963) stated that the possibility of this species being found again "should not be scoffed at", and that "pig hunters often report sighting black birds in the forest" (30). Pekelo (1967) added that he "will not agree" that the 'Ō'ōnukuumu is gone until he had a chance to put his binoculars on a "black bird" that he saw flying through some 'ōhi'a back of Kamela (? Kamalō) (31).

Hawaii Division of Fish and Game (1969 report) listed the 'Ō'ōnukuumu as "thought to be extinct or extirpated" (2). Atkinson (1977) reported that none had been seen since 1907 (3).

CHRONOLOGICAL DISTRIBUTION OF RECORDS

The chronological pattern of records shown below in Table 1 exhibits a relatively large number for more than a decade following discovery of the species in 1893. Decades since the 1910's are characterized by few records, all negative.

Table 5.

Chronological Distribution of 'Ō'ōnukuumu Records By Decade,
1778 to 1978

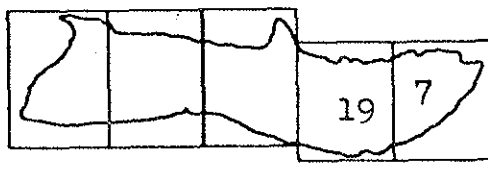
1770's - 0	1840's - 0	1910's - 0
1780's - 0	1850's - 0	1920's - 0
1790's - 0	1860's - 0	1930's - 2
1800's - 0	1870's - 0	1940's - 0
1810's - 0	1880's - 0	1950's - 1
1820's - 0	1890's - 19	1960's - 3
1830's - 0	1900's - 11	1970's - 1

GEOGRAPHICAL DISTRIBUTION OF RECORDS

A total of 26 of some 39 listed records are referable to quadrangles where the 'Ō'ōnukuumu was reported, collected, or believed to have ranged. Geographical distribution of records by quadrangle is exhibited in Figure 1.

Figure 3.

Distribution of 26 Observations, Reports and Museum Records of Drepanis funerea, per quadrangle, on the island of Moloka'i from 1778 to 1978.



SUMMARY AND CONCLUSIONS

Endemic to the island of Moloka'i, 'Ō'ōnukuumu is a medium-sized black forest bird with long curved bill. Only 10 specimens are known.

Confined to the higher forest and one of the rarer birds on Moloka'i when discovered in 1893, the species had disappeared from its type locality by 1902. In 1907, after much fruitless searching of upper elevation forests, a few survivors were located in the headwaters of Honoulu Wai stream and Moanui Valley. Second-hand reports in the 1930's and 1960's that this species still existed have not been substantiated. The 'Ō'ōnukuumu is presumably extinct.

Drepanis funerea

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Drepanis funerea

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- (2) Hawaii Division of Fish and Game 1 May 1969 ms. "Checklist of the native Hawaiian birds showing range and status". (prepared by Gerald Swedberg).
- (3) Perkins, R. C. L. 1892-1895 field notes.

APPENDIX

1. Observations, reports and specimen records are organized by island group, island, district and/or quadrangle map. Order of listing, names and locations of district and quadrangle boundaries are explained and illustrated in CPSU/UH Report No. 4, Introduction To Part I, Historical Synthesis of Recent Endemic Hawaiian Birds.
2. Acronyms, composed of the first three letters of the author's (or senior author's) last name, the initial letter of the first name, and last two digits of the year of publication represent sources found in the bibliography under References Cited. For example, BRYW01 = Bryan, Wm. A. and Alvin Seale 1901. Notes of the birds of Kauai. Bishop Museum Occ. Papers 1(3): 129-137. In cases where it is necessary to distinguish between two or more articles published by an author in any given year, letters are added to the acronym in alphabetical sequence, e.g. BRYW01a - Bryan, W. A. 1901. A key to the birds of the Hawaiian group. Bishop Museum Press. 76 pp.

Parentetical numbers such as (5), represent references listed under Unpublished Sources Cited in the bibliography.

3. Place-names are cited in original form.
4. Parentetical information is qualified.

Drepanis funerea - Moloka'i

	Relative Abundance/Locality	El. (ft.)	Date	Source
ISLANDWIDE INFERENCE				
1	one of the rarer island birds / now confined to the higher parts of the forest...where the ground is soft and boggy		(1893/1896)	PERR03
2	HDFG: thought to be extinct or extirpated from this particular island / (islandwide)		(1969)	(2)
3	none seen since 1907 (islandwide)		(1977)	ATKI77
UNSPECIFIED LOCALITY				
4	Banko: Perkins collected 1 specimen / undesignated locality	5000 ft.el.	18 Jun 1893	(1)
5	Banko: Perkins collected 1 specimen / undesignated locality	4000+ ft.el.	Jun 1893	(1)
6	Banko: Perkins collected 1 specimen / undesignated locality	4000 ft.el.	Jun 1896	(1)
7	Perkins obtained specimens / unspecified locality	ca. 5000 ft.el.	Jun 1893	WILS94
8	Banko: Perkins collected 2 specimens / undesignated place(s) and elevation		13 Sep 1893	(1)
9	Banko: undesignated collector obtained 1 specimen / unspecified locality		undated	(1)

Drepanis funerea - Moloka'i

- | | | | |
|-----|--|-------------|---------|
| 10 | Perkins: seen on nearly each occasion / several | Jun 1896 | (3) |
| 10a | saw 7 in a single day / unspecified locality | (1893-1896) | PERRO3 |
| 11 | Perkins: totally absent from the places where I
got them...in 1893 / unspecified localities | 1902 | MUNG44b |

MULTIQUADRANGLE

- | | | | |
|----|---|------|--------|
| 12 | none seen on bird survey / on both east and
west sides of the forest | 1936 | MUNG63 |
|----|---|------|--------|

KAMALO

- | | | | |
|----|---|---------------|-----|
| 13 | Perkins: shot two / up from Makakupaia (along
Pelekunu divide) | 18 Jun (1893) | (3) |
| 14 | Perkins: shot one (lost) / near top of Pelekunu
Valley ridge from Makakupaia | 21 Jun (1893) | (3) |
| 15 | Perkins: shot one, saw another / near Pelekunu
Pali from Makakupaia | 25 Jun (1893) | (3) |
| 16 | Perkins: shot three, saw another / high forest
above Makakupaia | 27 Jun (1893) | (3) |
| 17 | Perkins: shot one, heard another / in highest
forest above Makakupaia | 9 Jul (1893) | (3) |
| 18 | Perkins: none heard / in highest forest above
Makakupaia | 10 Jul (1893) | (3) |

Drepanis funerea - Moloka'i

- | | | | |
|----|---|----------------|---------|
| 19 | Perkins: one seen / in highest forest above Makakupaia | 11 Jul (1893) | (3) |
| 20 | Perkins: two shot / unspecified locality (up from Makakupaia) | 12 Sep (1893) | (3) |
| 21 | Perkins: two shot / highest forest above Makakupaia | 22? Sep (1893) | (3) |
| 22 | Perkins collected a series of skins, and private collectors later depleted the district / above Pelekunu Valley | (1893) | MUNG44a |
| 23 | T. Meyer secured six specimens in six months of more or less continuous collecting / in the forests at the head of Pelekunu Valley) | (1894) | BRYW08 |

KAMALO

- | | | | |
|----|---|-------------------------------------|---------|
| 24 | none found by Munro who spent 4 weeks looking / (in the forests at the head of Pelekunu Valley) | Mar, Apr 1907 | BRYW08 |
| 25 | none found after 3 weeks search / Kamoku camp camp, southwest side of Hanalilolilo mountain on the edge of the great bog forest, at the head of Waikolu and Plekunu Valleys | 4000 ft.el. (15 Apr to 15 Jun 1907) | BRYW08 |
| 26 | neither Alanson Bryan nor I could find any there / the district above Pelekunu Valley where Perkins had collected | 1907 | MUNG44a |
| 27 | only a rumor that one had been seen...a few years before / in the Wailau Valley | 1936 | MUNG44a |

Drepanis funerea - Moloka'i

- | | | | |
|----|--|--------|--------|
| 28 | reported...by workmen...I take stock...birds distinctive...not easily confused with others / camping in the forests high on Olokui | 1936 | DONW63 |
| 29 | I have had a report...difficult to confuse with anything else / on Olokui | (1954) | DONW54 |
| 30 | possibility...being found again should not be scoffed at...pig hunters often report sighting black birds in the forest / unspecified localities | (1963) | PEKN63 |
| 31 | will not agree that (it) is gone...until I have the chance to put my...binoculars on a black bird that I saw flying / through some ohia back of Kamela (?Kamalo) | (1965) | PEKN67 |

HALAWA

- | | | | |
|----|---|------------------------|--------|
| 32 | found none in 10 days search / in a section probably never before hunted over, or perhaps never even visited by white men...in the Halawa mountains | 15 Apr to 15 Jun 1907) | BRYW08 |
| 33 | collected one / along ridge Moanui side of Honouluwai Valley several miles up from Moanui Mountain ranch house | (early Jun 1907) | BRYW08 |
| 34 | collected 2 specimens / (well up) along the ridge between Waialua and Honouliwai (Honouluwai) streams...from camp...at the head of Waialua Valley | (Jun 1907) | BRYW08 |
| 35 | Banko: Bryan collected one specimen / headwaters of Honolesleuwei (Honouluwai) | 4 Jun 1907 | (1) |

Drepanis funerea - Moloka'i

- | | | | |
|----|---|------------|---------|
| 36 | Banko: Bryan collected one specimen / Moanui | Jun 1907 | (1) |
| 37 | Banko: Bryan collected one specimen / head of Moanui Valley | 7 Jun 1907 | (1) |
| 38 | Bryan secured 3 male specimens / at Moanui farther round the island (from Pelekunu) to the east | (?1907) | MUNG44a |

ABSTRACT

Drepanis pacifica, or Mamo, is a medium-sized black and yellow forest bird with long curved bill. Endemic to the island of Hawai'i it once ranged in Kohala, Kona, Ka'ū, and Mauna Kea Districts. Exhaustive search of literature and field journals uncovered only 32 reports (many negative), collection records, and related statements on its relative abundance and/or geographical distribution from 1779 to 1978. Eleven specimens are known. Only scattered unsubstantiated reports exist after 1898 when the last group was seen above Hilo. Intensive island-wide surveys in the late 1970's failed to find this species. The Mamo is presumably extinct.

53. Drepanis pacifica

Mamo

The Mamo is a medium-sized (ca. 9 inch long) black forest bird with rich yellow rump, tail coverts, shoulders, thighs, vent and portions of the wing, and a long curved bill (Rothschild 1900). Endemic to the island of Hawai'i, this species was first collected during Cook's last voyage in 1779 and described a few years later by Latham in 1782 (Rothschild 1900).

Numbers and principal repositories of 11 known specimens are as follows: American Museum of Natural History (2), Bernice P. Bishop Museum (2), and Museum National D'Histoire Naturelle (Paris) (2) (Banko 1979 report).

Rothschild (1900), Henshaw (1902) and Perkins (1903) sketch what little is known of the relative abundance and distribution of this species.

In the following historical account, one or two digit numbers in parenthesis refer to specific records in the Appendix. Sources cited in the Appendix may be traced to complete references in the bibliography.

Three of the eleven known specimens were obtained by Cook's naturalists during his visit to Kealahou Bay, Kona, in the early months of 1779 (Stresemann 1950) (Banko 1979 report) (16, 17). J. Latham, in a 1787 Supplement to his 1782 description, termed the species "common at Owhyhee", no doubt basing this statement on information originally recorded by Cook's expedition member(s) (16a).

Brigham (1892, 1899) states that (J. D.) Mills obtained specimens in 'Ōla'a ca. 1860, later adding the year 1864 - this based on a statement by Mills (21, 22). Another specimen taken by Mills bears the date "ca. 1859" (Banko 1979 report) (20).

T. Ballieu seems to have been the next naturalist to authenticate existence of this species, taking two specimens, probably on or near Pulehua Ranch, Kona, ca. 1876 (9). Dole (1879) included the Mamo on an early check-list, and Perkins (field journal) credits an old native Hawaiian with saying that this species was formerly "common" (10, 11).

S. B. Wilson states that he was assured by a native in november 1887 that the Mamo still existed in 'Ōla'a, Puna District, but he (Wilson) failed to record or collect any either there or elsewhere (Wilson and Evans 1891) (23, 24).

Brigham (1892, 1899) reported that he saw three Mamo in a sandalwood tree around 7000 ft. elevation on Hualālai volcano in 1890 (13, 14), and that this species "has of late years become very rare", adding that "several" had been caught by Mr. Palmer (1,2).

Palmer (field diary) noted in January 1892 that Mamo (in Kohala Mountains at least) were said to have been seen for the last time near the "old mountain-house, Waimea; just below finest forest, for higher up it seems to die off" (Rothschild 1900) (12). Later, on 16 April 1892, Ahulau (a native Hawaiian bird catcher assisting Palmer) captured a Mamo alive about 23 hours trekking time up the slopes of Mauna Loa out of Hilo "above the first-sighted Lolu palms, partially up big gulch" (25, 26). Another Mamo was heard by Wolstenholme - another of Palmer's assistants - apparently in the same area as the one captured by Ahulau (Rothschild 1900) (25). However, Palmer (field diary) noted on 13 October 1892 that "Ahulau, my bird catcher, tells me he could not find another Mamo, although they have been up (to the area previously visited) several times" (Rothschild 1900) (27). Rothschild (1900) quotes H. W. Henshaw as stating that he (Henshaw) "saw at least 3...possibly 4 or 5; shot one but it escaped: in the "woods above Kaumana" in July 1898, and that by 9 October 1899 this species was "very rare...on verge of speedy extinction" (3, 29). Henshaw (1902) wrote that Mamo were "reported heard" by a native not far from the woods of Ka'ūmana (31).

Perkins (field journal) noted in January 1896 that he had conducted an unsuccessful search for "many days" in the dense forest well above the highest cane field in 'Amauulu near a fork of the Wailuku River with a native who could imitate call notes of this species..." the old man showed me the very tree in which it had been shot at the time when the 1880 flow was approaching Hilo" (28). Perkins (1903) stated later that the Mamo was "now a very rare bird" but that "formerly it was without doubt of wide range...known to have occurred both in the leeward and windward forests as well as in the Kohala mountains" (7). Perkins (1903) added that "it is quite certain that up to about 20 years ago these birds still existed in some numbers in the forests of Hilo district, for at the time of the great lava flow of 1880 a considerable number were shot for the sake of the yellow feathers, as much (many) as twelve having been obtained by a native bird hunter in a single day" (7).

H. Shipman, a resident of Puna District since ca. 1892, recalled seeing Mamo once ca. 1900 around the family summer residence at 29-mile, Volcano, near the headquarters of what is now Hawaii Volcanoes National Park (Banko field journal) (19).

There seem to be no first-hand reports of Mamo observed in the wild after ca. 1900. Richards and Baldwin (1953) stated

that they kept an "unsuccessful lookout" for this species in various field surveys they conducted from 1940 to 1951 (4). Hanson (1960) noted that the new owner of the Pu'uwa'awa'a Ranch reported seeing a Mamo "several times" in a forested area behind the Ranch accessible only by horseback, but gave no further details (15). Donaghho (1963) noted a report by Bill (? L. W.) Bryan that he (Bryan) saw a Mamo on the Ka'ū slopes of Mauna Loa but gave no indication of the locality or year (18). Hawaii State Division of Fish and Game (1969 report) listed the Mamo as "thought to be extinct or extirpated" (5). Atkinson (1977) stated that this species had not been seen since 1898 (6). Whitten (1978) reported that E. Kridler, spokesman for the U. S. Fish and Wildlife Service, said that (government) survey teams hoped to find the Mamo during their comprehensive 1976 to 1978 bird survey of the island of Hawai'i, but "no such luck" (8).

CHRONOLOGICAL DISTRIBUTION OF RECORDS

The chronological pattern of records shown below in Table 1. exhibits a 70-year gap following discovery of the Mamo by Cook's naturalists in 1779, a gradual increase from the 1850's, and scattered reports and pronouncements acknowledging extinction from the 1910's to 1980's.

Table 6.

Chronological Distribution of Mamo Records By Decade,
1778 to 1978.

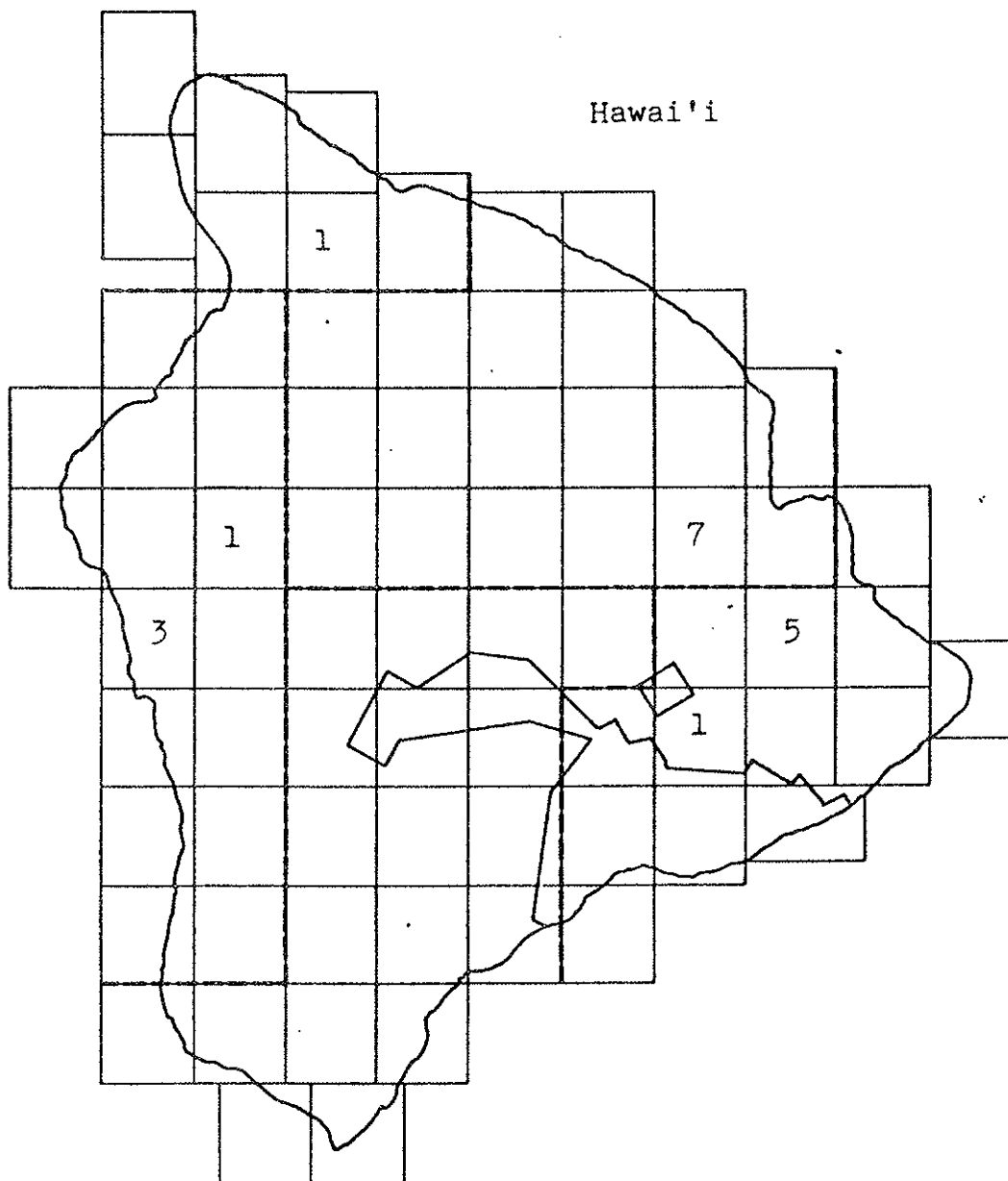
1770's - 3	1840's - 0	1910's - 0
1780's - 0	1850's - 1	1920's - 0
1790's - 0	1860's - 2	1930's - 0
1800's - 0	1870's - 2	1940's - 1
1810's - 0	1880's - 3	1950's - 0
1820's - 0	1890's - 14	1960's - 3
1830's - 0	1900's - 1	1970's - 2

GEOGRAPHICAL DISTRIBUTION OF RECORDS

A total of 18 of some 32 listed records refer to quadrangle where the Mamo was reported, collected, or believed to have ranged. Geographical distribution of records by quadrangle is exhibited in Figure 4.

Figure 4.

Distribution of 18 Observations, Searches, Reports and Museum Records of Drepanis pacifica, per quadrangle, on the island of Hawaii from 1778 to 1978.



SUMMARY AND CONCLUSIONS

The Mamo is a medium-sized black forest bird with long curved bill and rich yellow rump, tail coverts, shoulders, thighs, vent, and portions of the wing. It is endemic to the island of Hawai'i. Only 11 specimens are known.

The Mamo was reported common in the Kealahou area when three specimens were collected by Cook's naturalists in 1779. T. Ballieu obtained two specimens, presumably in Kona, in 1876. It was said to have been common in 'Ōla'a and above Hilo at least until 1880. J. D. Mills obtained five specimens, presumably in the Hilo area, sometime between 1851 to 1887. Early naturalists reported seeing it on Hualālai in 1890, noted a report of its occurrence in the Kohala Mountains up until about 1892. The last group of Mamo was observed above Hilo in Kaūmana on 18 July 1898. Scattered unverified reports of sightings were made on Hualālai around 1960, and in Ka'ū in 1963. Intensive island-wide surveys by U. S. Fish and Wildlife Service teams in the late 1970's failed to find this species. It is presumed to be extinct.

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- (1) Banko, W. E. 1979. Specimens in museum collections. History of endemic Hawaiian birds, Report 2. Cooperative National Park Resources Study Unit, Department of Botany, University of Hawaii at Manoa. 80pp.
- (2) Hawaii Division of Fish and Game 1 May 1969 ms. "Checklist of the native Hawaiian birds showing range and status". (prepared by Gerald Swedberg).
- (3) Perkins, R. C. L. 1892-1895 field notes.
- (4) Banko, W. E. 1965-1978 field notes and interviews.

APPENDIX

1. Observations, reports and specimen records are organized by island group, island, district and/or quadrangle map. Order of listing, names and locations of district and quadrangle boundaries are explained and illustrated in CPSU/UH Report No. 4, Introduction To Part I, Historical Synthesis of Recent Endemic Hawaiian Birds.
2. Acronyms, composed of the first three letters of the author's (or senior author's) last name, the initial letter of the first name, and last two digits of the year of publication represent sources found in the bibliography under References Cited. For example, BRYW01 = Bryan, Wm. A. and Alvin Seale 1901. Notes on the birds of Kauai. Bishop Museum Occ. Papers 1(3):129-137. In cases where it is necessary to distinguish between two or more articles published by an author in any given year, letters are added to the acronym in alphabetical sequence, e.g. BRYW01a - Bryan, W. A. 1901. A key to the birds of the Hawaiian group. Bishop Museum Press. 76 pp.

Parenthetical numbers such as (5), represent references listed under Unpublished Sources Cited in the bibliography.

3. Place-names are cited in original form.
4. Parenthetical information is qualified.

Drepanis pacifica - Hawai'i

	Relative Abundance/Locality	El. (ft.)	Date	Source
ISLANDWIDE INFERENCE				
1	has of late years become very rare / (islandwide)		(1892)	BRIW92
2	several have been caught by Mr. Palmer / un- specified locality		(1892)	BRIW92
3	Henshaw: very rare...on verge of speedy ex- tinction / (islandwide)		9 Oct 1899	ROTW00
4	kept unsuccessful lookout / field trips to unspecified places		(1940-1951)	RICL53
5	HDFG: thought to be extinct or extirpated from this particular island / island of Hawaii		(1969)	(2)
6	none seen since 1898 / (islandwide)		(1977)	ATKI77
MULTIDISTRICT				
7	now a very rare bird / formerly it was without doubt of wide range over the island of Hawaii since it is known to have occurred both in the leeward and windward forests as well as in the Kohala mountains...it is quite certain that up to about twenty years ago these birds still existed in some numbers in the forests of Hilo district, for at the time of the great lava-flow of 1880 a con- siderable number were shot for the sake of the yellow feathers, as much as twelve having been obtained by a native bird hunter in a single day		(1892-1896)	PERRO3

Drepanis pacifica - Hawai'i

- | | | | |
|---|---|----------------------------|--------|
| 8 | E. Kridler: survey teams hoped to find...but no such luck / Kau, Hamakua Coast and 311,000 acres on west side between Hualalai and South Point; 5,800 count periods at 2900 stations on 243 miles of transects on the latter area worked by 11 biologists | 1976-1978
(28 Aug 1978) | WHIH78 |
|---|---|----------------------------|--------|

UNSPECIFIED LOCALITY

- | | | | |
|----|---|------------|--------|
| 9 | Banko: Ballieu collected two specimens /
(? Pulehua Ranch) | (ca. 1876) | (1) |
| 10 | (listed) / Hawaii | (1879) | DOLS79 |
| 11 | Perkins: old native: common / unspecified localities | 1880 | (3) |

Kohala District

KAMUELA

- | | | | |
|----|--|----------|--------|
| 12 | Palmer: said to have been seen...the last time / old mountain-house, Waimea; just below finest forest, for higher up it seems to die off | Jan 1892 | ROTWOO |
|----|--|----------|--------|

Kona District

UNSPECIFIED LOCALITY

- | | | | | |
|----|---|-----------------|------|--------|
| 13 | saw 3 in a sandalwood tree / on the slopes of Mauna Hualalai | 7000±
ft.el. | 1890 | BRIW99 |
| 14 | Three seen (Bringham) / on a sandalwood tree... on the slopes of Hualalai | | 1890 | BRIW92 |

Drepanis pacifica - Hawai'i

HUALALAI

- | | | | |
|----|---|--------------------|--------|
| 15 | new owner: reported seen several times /
forested area behind (Puuwaawaa) Ranch...
accessible by horseback only | Easter
vacation | HANC60 |
|----|---|--------------------|--------|

KEALAKEKUA

- | | | | |
|-----|---|--------------|--------|
| 16 | three specimens obtained / during several days
excursion from Kealakekua Bay into the interior | Jan/Feb 1779 | STRE50 |
| 16a | Latham: common | (1779) | ROTWOO |
| 17 | Banko: Cook's naturalists collected three
specimens / Kealakekua | (1889) | (1) |

Ka'ü District

UNSPECIFIED LOCALITY

- | | | | |
|----|--|--------|--------|
| 18 | Bill (P.L.W.) Bryan: said he saw / Ka'u slopes of
Mauna Loa | (1963) | DONW63 |
|----|--|--------|--------|

Kilauea District

VOLCANO

- | | | | |
|----|--|------------|-----|
| 19 | Banko: H. Shipman, long-time resident of the
Hilo area (since 1892) reported seeing mamo
only once / around summer residence at 29-mile
(Volcano) | (ca. 1900) | (4) |
|----|--|------------|-----|

Drepanis pacifica - Hawai'i

Kilauea District

MOUNTAIN VIEW

- | | | | |
|----|---|-------------|--------|
| 20 | Banko: Mills collected one specimen / Olaa,
Puna District | ca. 1859 | (1) |
| 21 | specimens obtained by Mills / Olaa | (ca. 1860) | BRIW92 |
| 22 | Mills: specimens obtained / near Olaa in Puna | 1864 | BRIW99 |
| 23 | natives assured the bird still existed / Olaa,
Puna district | (1887-1888) | WILS91 |
| 24 | failed to shoot specimens / vicinity Olaa | Nov 1887 | WILS91 |

Mauna Kea District

PIIHONUA

- | | | | |
|----|---|---------------|--------|
| 25 | bird catcher caught Mamo, one other heard by
Wolstenholme / about 23 hours hikeo out of Hilo,
above first-sighted Lolu palms, partially up
big gulch | 16 Apr 1892 | ROTWOO |
| 26 | Banko: Ahulau captured one alive for Palmer /
some distance above Hilo | 16 Apr 1892 | (1) |
| 27 | Palmer: Ahulau, my birdcatcher, tells me he
could not find another Mamo, although they have
been up several times / Hilo | 13 Oct (1892) | ROTWOO |

Drepanis pacifica - Hawai'i

Mauna Kea District

- | | | | |
|----|---|-------------|--------|
| 28 | Perkins: searched for unsuccessfully many days with native imitating call notes; native related that many were killed (in locality, when 1880 lava flow was approaching Hilo) / where I have been (dense forest well above highest cane fields in Amaulu near fork of Wailuku River, Mauna Kea) was a <u>definite</u> locality for the (mamo) bird, and the old man showed me the very tree in which it had been shot at the time when the 1880 flow was approaching Hilo | (Jan 1896) | (3) |
| 29 | Henshaw: at least 3...possibly 4 or 5; shot one but it escaped / woods above Kaumana | Jul 1898 | ROTHOO |
| 30 | nearly extinct...a pair, possibly a whole family (seen) / in the woods of Kaumana (above Hilo) | 18 Jul 1898 | HENHO2 |
| 31 | reported heard by native / not far from woods of Kaumana | 1899 | HENHO2 |